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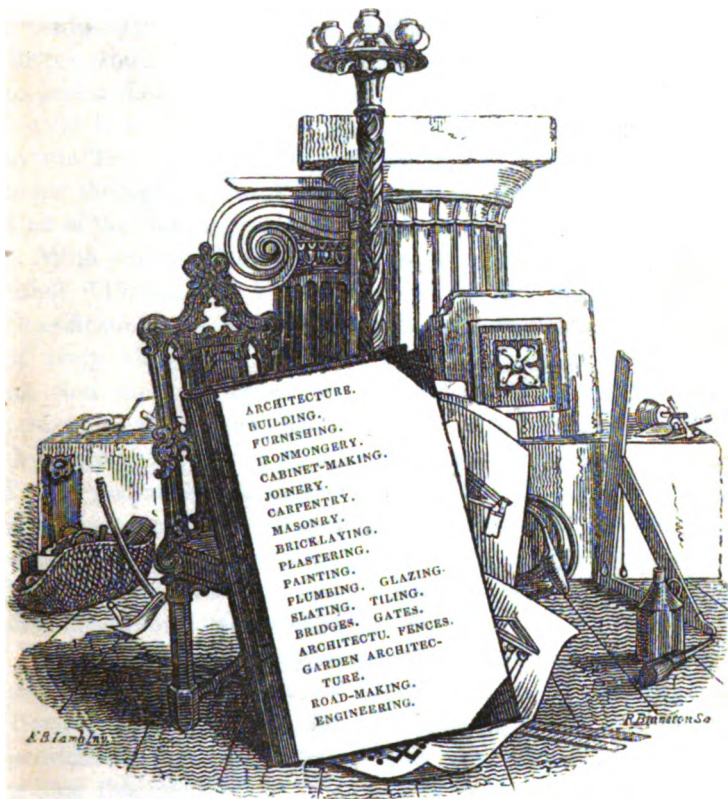


The Architectural magazine

John Claudius Loudon

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THE
ARCHITECTURAL MAGAZINE,
 AND
JOURNAL
 OF IMPROVEMENT IN
ARCHITECTURE, BUILDING, AND FURNISHING,
 AND IN THE VARIOUS ARTS AND TRADES
 CONNECTED THEREWITH.



CONDUCTED BY J. C. LOUDON, F.L.S. G.S. &c.
 AUTHOR OF THE ENCYCLOPÆDIA OF COTTAGE, FARM, AND VILLA ARCHITECTURE
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PREFACE.

IN this Third Volume of the *Architectural Magazine*, we have introduced a Summary View of the Progress of Architecture in Britain and other countries during the past year; and we mean to give a similar article annually. We have omitted the Alphabetical Index at the end of the Volume, as unnecessary; having in the Table of Contents included all the side headings to articles throughout the Work; and also given an Alphabetical List of the Buildings described or referred to.

With our next Volume, we mean to introduce an article, entitled "Professional Precedents," which will include Forms of Specifications, Estimates, Data, Desiderata, &c., for buildings of every kind, public and private. It has been suggested to us, that such an article will be extremely useful for young architects, and for builders and other tradesmen connected with Architecture, who reside in the country; and, as the materials for the preparation of such articles can only be supplied by men in extensive practice, we invite all those who have the prosperity of Architecture at heart, and are friendly to this Magazine, to lend us their assistance, and to send us copies of the kind of documents to which we allude.

We have it also in contemplation, to supply, quarterly or half-yearly, Lists of the Prices of Building Materials and Labour in London, Edinburgh, Dublin, and, perhaps, some other places; provided we can find correspondents who will undertake to contribute this information. For this purpose, we earnestly invite the cooperation of surveyors, in London, and in every part of the country; because, unless we obtain this, we shall not be able to carry our intentions into effect.

In this Volume we have devoted a separate article to the Institute of British Architects; and, in our next, we mean to have a similar article for the Architectural Society, trusting to the continued kindness and liberality of the officers of both Societies for enabling us to do so.

The advantages which are resulting from Architectural Societies in the metropolis will, no doubt, soon lead to the institution of similar societies in our provincial towns; and it is only necessary to reflect on the benefits which have resulted to the country, with regard to agriculture and horticulture, from the establishment of provincial agricultural and horticultural societies, to be convinced that Provincial Architectural Societies will advance architectural improvement in a ratio altogether unprecedented in this or in any other country. How greatly this will contribute to the comforts of every class of society, and how much it will add to the cultivated character and scenic beauty of the country generally, it is delightful to contemplate.

Where Provincial Architectural Societies are about to be established, we would suggest the idea of combining with them other local subjects connected with the art, so as to include not only what relates to the improvement of streets, drainage, sewerage, &c., which may be considered as belonging legitimately to Architecture, but to extend their views to the ornamenting of streets by planting trees; and to the formation or improvement of public walks, public gardens, zoological gardens, cemeteries, baths, and other places conducive to health, recreation, or ornament. The Americans have an Ornamental Tree Society, the principal object of which is to plant trees in public squares, avenues, roads, cemeteries, &c. (see *Gard. Mag.*, vol. xi. p. 207.); and, in Bavaria, a committee of the Bavarian Agricultural Society is authorised by government to devise improvements in the public gardens and roads, and in the scenery of the country generally. In a note below *, we have quoted from the *Gardener's*

* "*Suggestions for a Society for promoting the Improvement of the Public Taste in Architectural and Rural Scenery.* By W. S. — The notice (p. 20.) of an American 'Ornamental Tree Society' has recalled some ideas which have long floated in my mind as to the great desirableness of having a similar society established in London, where, although a good deal has been done towards its embellishment by trees, so much in this respect remains yet to be accomplished. Who that has a genuine love of nature has not felt, when stumbling, in one of the narrow streets of the city, on an old elm, gracefully even with its soot-encrusted foliage breaking the monotonous and endless vista of brick, almost as a traveller does in the desert, when meeting with a spring and its accompanying date trees? and has not been as much mortified, after another turn, in passing a second churchyard, which, for want of some friendly hand to plant a tree in it, is an eyesore to the passer-by, instead of a relief and refreshment? Who, again, in the western quarter of the metropolis, can have failed to be struck by the excellent effect of a few trees judiciously planted in the space not wanted for the kitchen area, at the ends of the corner houses of squares and large streets? and to have remarked how forlorn and dis-

Magazine, an article by a correspondent, written in 1835, suggesting such a society for the metropolis as we would recommend

gusting those very spaces become, even though railed off, as they generally are, when suffered to remain without a tree or shrub? And, lastly, to omit other instances, who that has been charmed with the aspect of one of the squares judiciously planted and laid out, can help being as much shocked with the bare and tasteless way in which others are still suffered to remain?

"Now, in all these cases, the remarks of an individual would have little or no effect in extending what is praiseworthy and rectifying deficiencies, though in both respects it is evident that public opinion, directed and supported by a numerous society, might accomplish great things, and render London incomparably more ornamented by trees than at present, including the planting of parts of the Regent's Park with a complete collection of hardy exotic trees and shrubs, as you have so often suggested: while, if the objects of this society comprised also, as I should strongly recommend, the picturesque (if the term may be here allowed) generally, such as criticising tasteless erections; advising the general application of stucco or cement to the fronts of houses, instead of the present plan of attempting to restore their new look by colouring and pointing [what bricklayers call colouring and tuck and puck], the effect of which is so transitory; and tinting the stuccoed parts with one shade of stone colour, in lieu of the wretched Harlequin coats at present seen, &c. &c.; it may be safely asserted that few associations, not directed to purposes of charity, would produce a richer harvest of enjoyment to those whose taste is already formed, or one of more instruction to those in whom this faculty yet requires to be awakened or cultivated.

"I trust that these hastily scrawled hints will be expanded, by yourself or some one of your correspondents, into some practical plan of a society with objects such as I have alluded to, but with a better and more comprehensive title than that in America which has suggested them.—*London, April 6. 1835.*"

Note by the Conductor. — "The taste of this country is altogether disproportionate to its wealth; and it is very far inferior to the taste displayed on the Continent, among nations comparatively poor. In what other city in the world, but London, are such interminable lines of dingy brick houses to be found, without the slightest variation of feature, neither differing in height, nor in breadth of front, nor in the number, disposition, or size of the doors and windows? Compare the long streets of first-rate houses in the west end of London with houses of the same class in Paris, Berlin, Munich, or Petersburg. By what other nation in the world would such immense sums be spent in erecting public buildings which are often, soon after their completion, found to be so unfit for the purposes for which they were intended, as to render it necessary for them to be pulled down? In the short space of twenty years, we have seen three royal palaces razed to the ground, all commenced during the lifetime of the present generation; and the present palace at Picnic, we strongly suspect, will soon share the same fate. Is there any other country in Europe, where a space situated like the Regent's Park, and of equal extent and natural beauty, would have been planted with so few sorts of trees, and these few so tastelessly disposed? And what shall we say to Hyde Park and Kensington Gardens, which, as far as the kinds of trees and shrubs are concerned, might as well be under the care of a common woodman? Little more can be advanced in favour of the shrubberies in the gardens of the Picnic Palace, which are filled, for the most part, with the common stuffing of the nurseries. How is it that we can spend a million on a piece of architecture that all men of taste, foreign and domestic, agree to be most wretched, and which is, at the same time, placed in a damp and unwholesome situation,

for provincial towns; to which we have added a postscript that we wrote at the time, hoping by both to stimulate our provincial readers to take the subject of local architecture and landscape improvements into serious consideration.

In conclusion, we again invite all who are friendly to this Magazine, and who wish to promote the objects we have in view, to lend us their assistance: and this they can do by themselves contributing, by exciting others to contribute, and by recommending the Magazine to their friends. To those who have thus assisted us we return our most sincere thanks; never, even for a moment, forgetting that it is to their kindness we are mainly indebted for the success of this Work.

J. C. L.

Bayswater, November 12. 1836.

and yet cannot spare a few thousands for planting, in a superior manner, our public parks and gardens? The answer is easy. The public hitherto have not had a voice in this kind of expenditure. They have not been allowed a voice in any matter of taste, because they were, in a great measure, without taste to gratify. Let this taste, which at present lies dormant in the mass of society, be called into existence by cultivation, and we shall soon see a change in all our public buildings, gardens, and walks. Again we say that the idea of promoting this object by an association is a most happy one; and we earnestly entreat our correspondents to lose no time in endeavouring to carry it into execution. In this age of cooperation, there can be no difficulty in establishing such a society. It would, in all probability, soon be joined by numbers. Architects would become members of it for the sake of the professional hints which they would receive from the discussions carried on, as well as to keep up their taste to a par with that of the society. Landscape-painters, and artists generally, would also join it for the same purpose. Builders, and all owners of property in and about large towns, and especially the metropolis, would belong to such a society, because what tended to ornament their property would tend also to increase its value. Men of taste would join it for the sake of mental gratification; and a large number from the idea of superiority which is generally associated with the idea of refined taste.

"Most of our readers are aware that more attention is paid to the architecture of Munich, its public gardens, roads, and the beauty of its surrounding scenery generally, than is done in any other kingdom in Germany. This attention is deputed by the government to a committee of the Bavarian Agricultural Society, who publish reports as to what they think ought to be done, accompanied by remarks and suggestions, in a monthly periodical, entitled '*Monatsblatt für Bauwesen und Landesverschönerung*. Herausgegeben von einer gemeinschaftlichen Deputation der Vereine für Landwirthschaft und Polytechnik in Baiern. Munich, 4to.' The motto on the titlepage consists of the words, 'Agriculture,' 'Gardening,' and 'Architecture,' placed on the three sides of an equilateral triangle. This publication, of which we possess several volumes, has, we believe, contributed much to the widening of streets, planting of trees along the public roads, and to the formation of foot-paths, gardens, and other useful and ornamental public objects."

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THE
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ORIGINAL COMMUNICATIONS.

ART. I. *On the different Significations of the Words "a Whole," in Architecture.* From the French of QUATREMÈRE DE QUINCY.

THE expression, "a whole," has a double signification, and it is used in two different senses; the one, simple and material; the other, compound and intellectual; or, in other words, theoretical.

Under its commonest acceptation in architecture, a whole means the general mass of an edifice, or the entirety of the different parts which compose it. We say thus: "The whole of the Vatican and its dependencies covers such a space of ground;" — "Such a monument, or such a public establishment, forms a whole of such or such an extent;" — "The aspect of such an edifice gives the idea of a great whole." According to the sense of these phrases, it is evident that the words, "a whole," must be considered in them under their material aspect.

In architecture, there is another manner of understanding the *tout ensemble*, or entire whole, of a plan or an edifice; and there is an art of making, in a moral sense, a whole, the parts and the *ensemble* of which would be reciprocally subordinate to each other. The art of making them thus subordinate consists in giving to the parts of a building, whether great or small, an agreement of form, disposition, and decoration, which establishes among them a necessity of being thus, and makes them appear as one body, each member of which explains the whole; as the whole, in return, enables us to form a judgment of each of the parts. It is the principle of this relative subordination that is called the principle of a whole, in every architectural work. The merit of a whole, such as we have just defined it, consists in its being rarely met with, particularly in great public monuments. So many successive chances are mixed up with the circumstances upon which the completion of such buildings depends, that, in modern times, great edifices have been seldom finished by their designers. The plan of Michael Angelo for St. Peter's at Rome, so remarkable as a whole, was totally changed by the great addition of the nave by which it was

2 Significations of the Words "a Whole," in Architecture.

lengthened. It is only with respect to interior decoration, that this noble edifice was restored to that unity of taste which causes it to be so much admired. Although the merit of a whole depends upon a number of considerations, which would form the substance of a treatise, we shall here content ourselves with briefly indicating the three points of view under which a whole may be most clearly recognised; namely, *Design*, *Elevation*, and *Decoration*.

Design. — It is, without doubt, of the greatest importance, in the formation of an edifice, that its plan should form a whole; but this merit in a design, addresses itself more to the understanding than to the eyes; this part being less apparent and perceptible than any other to the greater proportion of spectators. We often see a degree of system and agreement predominate in plans, which is contradicted in their execution; and which is too frequently set aside by causes over which the artist has no control. There exists, also, in many plans, a sort of mechanical correspondence, which consists in chalking out the arrangement of one side exactly by the other; a merit more imaginary than real, and which is a total loss to the spectator, as it can contribute but little to the effect of the whole.

That the *Elevation* should form a whole is certainly a most essential point in nearly every edifice. This ought to consist, as much as possible, in making the exterior masses correspond with the interior; or, or least, in not suffering either to present a glaring contradiction to the other: as, for example, is done in many of the frontispieces of modern churches; which apparently set forth, on the outside of the building, several stories, but which have only one in the interior. The whole of an elevation ought to be considered as that of an organised body, in which every part, as shown to us by nature, has a constant harmony with the rest. This harmony ought to reign, also, in whatever constitutes the connexion between the exterior of the building, and the arrangement and general proportion of its principal masses with the subordinate ones; likewise, in that affinity, or connexion, which allows us to restore an edifice by the sole aid of one of its fragments.

Decoration. — The art of producing a whole in the decorations of an edifice is not the part in which architects err the least frequently. Some edifices may be seen, where ornaments are lavished on some parts, and shabbily economised with respect to others. It may happen, that this fault is produced by a system of contrast, ill placed, and ill understood. In architecture, the effect of contrasts in decoration can scarcely have a place, except with regard to the distribution of the interior; where the artist, in order to set forth the enrichment of one part, preserves the rest in a character of affected simplicity,

But the essence of a whole, in decoration, does not, in general, apply itself to interiors, where each part forms a detached whole, and often without any connexion with others.

We say the spirit, or essence, of the whole, in opposition to the term as applied to details. The first is that which seizes upon and prearranges great combinations; the second is only employed upon trifling dependencies. The first is, without doubt, the most important; but, as great things are composed of small ones, we must not despise the spirit, or essence, of details.

ART. II. *Observations on the Composition of a Sixth Order in Architecture.* By E. TROTMAN, Esq., Architect.

"THE ingenuity of man," says Sir William Chambers, "has hitherto not been able to produce a sixth order, though large premiums have been offered, and numerous attempts been made by men of first-rate talents to accomplish it. Such is the fettered human imagination, such the scanty store of its ideas, that Doric, Ionic, and Corinthian have ever floated uppermost; and all else that has ever been produced amounts to nothing more than different arrangements and combinations of their parts, with some trifling deviations, scarcely deserving notice: the whole generally tending more to diminish than to increase the beauty of the ancient orders." The same sentiment continues to be maintained and propagated among most of those who make any pretensions to an acquaintance with architecture, as possessing all the authority of unimpeachable tradition. That it does not deserve, however, to be so implicitly received, it will be our object in the ensuing remarks to show; and, indeed, the attainment of that object will probably be considerably facilitated in the minds of those who pay a deference to the dicta of the author above quoted, if they will deliberately reperuse the passage with which we have commenced. The truth is, that Sir William must unquestionably have perceived and felt that the Tuscan and the Composite held but an insecure claim to the distinction of separate orders, as contrasted with the other three; that they had been elevated to the rank of orders by the masters of the modern Italian school, rather than by the practice of the ancients; and that, after the preeminence justly acquired by the "Doric, Ionic, and Corinthian," the proper object to call for an exercise of the "ingenuity of man" was, the composition of a *fourth* order, broadly distinguished from the rest, rather than of a sixth. Sir William admits elsewhere, that, with respect to the Tuscan, there remains considerable obscurity upon the statements of Vitruvius; and that, with regard

to the Composite, he does not at all individualise or particularise such an order. To us, it appears, indeed, that Vitruvius makes no reference to more than three orders, properly so called; and that, after descanting upon these, the account which he adds of the character of Tuscan temples has reference only to a coarse and rustic style of building, very suitable to some of the plainer purposes of architecture, but inadmissible within the number of its established systems of decoration. Assuredly, the Tuscan of the Italian school is not the Tuscan of Vitruvius, as every one knows; and equally incapable of receiving such a denomination are those nondescript columns in the Roman remains, which just fall short of the Doric character, from the Trajan Column downwards. But, dismissing the so-called Tuscan order, we will add one remark with respect to the Composite; and that is, that its very name implies a defect in its claim to be received among the established orders, since its existence depends upon an intermixture, or confusion, of two of the others; without the exhibition of the slightest originality; an intermixture which might be varied among the three Grecian orders, by addition or inversion, to a yet greater extent, and, probably, with equal title to general acceptance. But, assuming, for a moment, that the classification of the Palladian school, and the practice of its many and eminent masters, have rendered it incumbent upon us to retain the five orders as duly constituted, the unprejudiced mind can scarcely fail to be arrested by the glaring absurdity of the charge, which accuses modern architects of being incapable of composing a sixth order, when, of those established, the first differs from the second, and the fourth from the fifth, only in circumstances so insignificant as almost to disappear in comparison with the distinctions of the three Grecian orders relatively. Add to this the absurdity of forbidding the use of foliage, as applied to the composition of any new capital, under the liability of at once constituting such a capital Corinthian, while yet this limitation is waved without hesitation for the admission of the Composite order. We presume, therefore, that, if the question were fairly stated, the difficulty lies; not in the invention of a sixth order in architecture, but in finding reasonable conditions for one in the Palladian system.

But, that we may make this subject yet more clear, let us enquire in what one member, or in what entire conformation of its members, the distinctiveness of an order, consists: whether in the column or its entablature; in parts of either, or in the whole of both. With regard to the entablature, a few reflections will convince us, that the denomination of an order is not necessarily determined by that member, and that its character is received from, and not bestowed upon, the column. In the system of five orders, indeed, it is commonly, and not incorrectly,

understood, that the Doric entablature, in the possession of the triglyph, gives a character to the column which sustains it; insomuch that a column of Tuscan proportions, if surmounted by an entablature having a frieze with triglyphs, would at once become Doric. This, however, is an inversion of the proper rule of procedure, and is an institution of the Palladian school for the protection of the identities of Tuscan and Doric: it is not so in the Grecian orders, to which Tuscan is a stranger. In the Grecian Doric, the presence or absence of the triglyph does not affect the identity, though it does the completeness, of the order; and hence we have instances not a few in which antæ and columns of that class are surmounted by an entablature destitute of triglyphs, and possessing only mutules and guttæ. Assuming, for a moment, such an extravagance as the placing of a Doric entablature upon an Ionic column, the Palladian rule would probably require the mass produced to be called Doric; while the Greek would certainly proceed upon the right principle of designating the whole from the character of the column, and name it Ionic. With regard, further, to the Ionic and Corinthian orders, as executed by the Greeks, it is evident, from existing remains, no less than from the testimony of Vitruvius, that their entablatures were used indiscriminately; that is to say, that the Corinthian order did but receive the more ornate kind of Ionic entablature, with dentils in the cornice, and, perhaps, an increased degree of lightness and finish in the mouldings, apporportioned to the decorativeness of the column. Concluding, therefore, that the essential differences of the orders are not to be looked for in their entablatures (at least so far as the architecture of Greece and of Vitruvius is concerned), we are left to the examination of the columns respectively. In these the capital is, of course, the feature which most prominently claims attention and confers distinction: but is it the *exclusively* distinctive feature? We apprehend that a consideration of the remaining members will show that it is so. The base is not a peculiar characteristic of any order; for in the Grecian remains there is no generic distinction between the base of the Ionic and that of the Corinthian column; while in the Palladian system the latitude allowed is yet greater, insomuch as the so-called Attic base is found applied indiscriminately to all the orders, except the Tuscan. Neither can the presence or absence of this member prove more than does its specific form: for, in the Doric order, it is wanting in the Grecian, while it is retained in the Italian, examples; and, again, it is absent from the decorative order of the Athenian Tower of the Winds, which is generally called Corinthian, no less than it is from the simple Doric of the Parthenon. Neither, again, is it the number of diameters allotted to the height of the shaft of the column, by which its denomination can be at all determined:

since, upon such a principle, the Greek and Italian Doric must be considered as two distinct orders, a first and third, with the Tuscan occupying the place of second between them; while the Italian Doric would scarcely be distinguished from the order of the Tower of the Winds, and still less would the Corinthian from the Composite; the general proportions of the shafts being, in these cases, nearly or quite identical. Besides which, it is hardly necessary to remark, that, even in the Grecian remains, and much more in the Roman, so much latitude prevails, that the proportions of columns of one denomination are constantly found approximating to, and even intrenching upon, those of others; so that we may produce examples of Dorics as tall as Ionics, and of Corinthians shorter than either. The truth is, in this matter, that the only judicious rule is, to proportion the height of the column to the greater or less degree of finish and of lightness bestowed upon its most prominent feature, the capital; for we do not at all require the discernment of association to discover the manifest unfitness of a Grecian Doric capital for a Corinthian shaft of ordinary height, or vice versa. We presume that no person will look further than to the members already noticed for the classification of an order, or revert to stylobates, pedestals, attics, &c., as having anything to do with that point, or as constituting, indeed, any part of an order. We are therefore left to notice the capital as forming the only proper characteristic of any specific order; as being that which, while it engages to itself the chief attention, ought to suggest alike the proportions of the shaft, the character of the base, and the degree of ornament to be bestowed on the entablature. In arriving, then, at the conclusion, that the difficulty of composing a new order rests primarily in the task of producing an original capital, adapting, at the same time, the relations of its shaft, base, and entablature to its own expression of solidity or lightness, it remains for us only to point out the essential and the relative characteristics of the capitals of the admitted orders, and to offer some observations upon those general forms which are applicable to the purposes of the capital. In doing this, however, it will be expedient that we should confine our remarks to general features; as our subject is, obviously, not to propose any specific design for a new order, but, simply, to show the practicability of making an addition to the number of those already acknowledged. We may, in the meantime, observe, with reference to the conclusion just stated, as to the dependence of the whole question upon the possibility of producing an original capital, that Sir William Chambers goes on to notice, in the sequel to the passage we have quoted at the commencement, that all the attempts to produce a sixth order, with which he was acquainted, had consisted merely in the variation

of some, or the slight transformation of all, the parts of the Corinthian capital; "the whole tending more to diminish than to increase the beauty of the ancient order."

But to proceed: the essential parts of every capital are two; the abacus, and the mass between it and the shaft. The object which these have to attain is, to provide for the epistylum above a square resting-place, or bed, which, for the sake of relief and distinction, no less than security, is always broader than the soffit of that epistylum, while it spreads over and protects the shaft below. The square of the abacus thus combines with the circle of the lower part of the capital inscribed within it, and affords, at the same time, lines in harmony with those of the soffit of the epistylum. Of course, we speak in general terms of the square form of the abacus, since it is not material to our subject to notice the ornamental modification of the square, which takes place in the instance of the Corinthian and angular Ionic capitals. The form, then, of the superior member of the capital being square, and that of the inferior being circular where it meets the shaft, we find in the classical capitals two modes in which the inferior mass is treated: one, in which it follows entirely the circular form of the shaft, receiving the square abacus immediately upon a circle of mouldings; the other, in which it takes an addition of diagonal appendages arising out of the circular form, so as to afford a gradual transition to the angular form of the superior member. In the former of these modes we may consider the Doric and Ionic capitals as being composed; and in the latter the Corinthian, to which the angular Ionic closely assimilates. As to the first, in the case of the Doric, the inferior mass consists, obviously, of the necking, annulets, and echinus, following the circular form of the column, and receiving, without any intermediate member of transition, the square abacus. The case of the Ionic, too, we are inclined to view in the same light, as being essentially composed upon the basis of the Doric, the echinus being enriched, and the abacus supposed to be extended laterally in each direction, and then, as it were, rolled up, till nearly square on the plan, so as to give the outline of a volute on either side of the column. When, however, the employment of the Ionic order in porticoes of two intercolumniations, or in peripteral temples, gave rise to the invention of the angular volute, and when the idea thence obtained was wrought upon to the production of the angular Ionic capital, which was exemplified (as in the Temple of Apollo at Bassæ) long before the period of Roman art, an introduction of forms of transition from the lower to the upper mass of the capital took place. The management of these forms was, however, most perfectly developed in the Corinthian capital, whether we consider its helices as modifications of

the volutes of the angular Ionic order, or as the improvement of Callimachus, in adopting the foliage of the acanthus; or, again, otherwise, as suggested by some of the numberless varieties of Egyptian capitals. Indeed, we are disposed to consider these helices, or volutes, under their peculiar treatment in the Corinthian capital, as constituting a distinction quite as important and characteristic as that gained by the introduction of the foliage of the acanthus. Many persons, it is true, have asserted that the employment of foliage at once constitutes a capital Corinthian; but to such an opinion we cannot by any means assent, believing the forms of transition produced by the volutes to be essential to that order, and knowing, also, that foliage, though of a poorer kind, is found to decorate capitals confessedly of another class, as the honeysuckle in the Ionic of the Erechtheum. It is, in fact, in this definition of the Corinthian order, if admitted, that we find the greatest obstacle to the production of a new capital, since it entirely precludes the use of foliage of any kind. However, discarding such a limitation as absurd, it is for those who are desirous of attempting the composition of an original capital, to examine if any new non-transition forms can be produced in the management of the abacus, with an effect as distinctive as that of the Ionic, in comparison with the Doric; or, again, if any new transition forms can be invented, either as applied to the superior or to the inferior mass of the capital. Some further ideas may be obtained from a consideration of those geometrical forms by which the cylindrical and the square may be variously united. Thus a cone may have a square inscribed within the circumference of its base, and all that remains outside that square cut off by planes perpendicular to the base; the apex of the cone then being cut off, and the whole inverted, a form will be obtained which furnishes us with the simple original of a capital exceedingly common, under many varieties, in our remains of Norman architecture. If a curved line be substituted for the straight whose revolution describes the cone, the outline becomes, of course, more graceful, and the whole mass thus produced would be found not intractable in the hands of the carver for more detailed ornament. But to enumerate, and, much more, to describe at large without diagrams, the various geometrical forms by which such a transition might be effected, would greatly exceed our limits, and we must leave them to be supplied by the study of the curious. Equally should we be at a loss, by mere verbal description, to convey a proper idea of the mode in which hints from Egyptian and other sculpture of capitals might be improved, with reference to the purposes under consideration; with the recollection, however, that, as to the Egyptian capitals, one point of dissimilarity to those of Greece is very

generally observable in the fact, that the square of the abacus is inscribed within, rather than around, the circumference of the supporting mass.

In conclusion: our notice of this subject must be considered only as having for its object the general illustration of the question, by the exposure of unfounded assertions and dogmatical restrictions, without meddling at all with that detail of design which belongs to the pencil alone; and, vain as it may appear to entertain a hope of surpassing the ancient orders by any modern addition, it is yet much more so to maintain their exclusive right upon grounds untenable, or to fix needless barriers in the way of the student, and needless prejudices in the minds of architectural readers in general.

13. *Furnival's Inn, Dec. 3. 1835.*

ART. III. *On the Designs for the New Houses of Parliament.* By
CANDIDUS.

WHAT your correspondent Heder recommends in regard to the designs for the new Houses of Parliament is well worth adopting, particularly that there should be a printed catalogue containing a detailed description of each design by its author: without such detailed descriptions, the designs being all for the same purpose, a catalogue would be no guide or assistance; whereas one formed upon such a plan would be almost invaluable, as it would enable us to compare the ideas of one artist with those of another, and to perceive what had been the particular and express aim of each. Still, excellent as Heder's suggestion is, and though, if it were acted upon, it would more than any thing else induce people to take the trouble of examining and thinking before they made up their opinions, there is no likelihood of its being put into practice, although a similar opportunity may never offer itself again; and, if the present occasion is not of sufficient importance to deviate from the old system, and establish a precedent that may lead to a better one, there is no chance that any change will ever be made at all in the mode of conducting such matters. I have very great doubts; or, to speak without using a commonplace phrase, I have no doubts at all on the subject. The course advised by Heder is so conformable with plain common sense, so simple and so straightforward, that we may be morally certain it never will be acted upon. It would almost entirely cut off all opportunity for mystery or favouritism; it would preclude all zigzag, tortuous modes of proceeding and circumfendibuses; and, instead of investing the judges with arbitrary and irresponsible power, it would render them amenable to public opinion, and, therefore, be a pledge for their acting with

circumspection; while it made them more anxious to show their good taste, and perfect impartiality.

Besides this, I should say that the judges ought not to be satisfied even with selecting the very best design actually offered, should that, as is most likely, happen in any respect to fall short of what is desired, or be susceptible of any improvement. Now, it would be almost a miracle were any one design to be superior, upon the whole, to all the rest, not only individually, but collectively also, combining in itself every advantage and every merit. On the contrary, there may be some ingenious ideas worth adopting, or some particular convenience worth retaining, in a design of inferior quality, and greatly defective in other respects; while that in which the greatest number of happy ideas shall have been brought together may, in some minor points, be rather unsatisfactory; or, if not positively unsatisfactory, still capable of being rendered more complete. A design that is very deservedly approved may, nevertheless, be greatly improved by careful revision; for rarely indeed does it happen that an architect can mature his thoughts in the first draught; and, however carefully the drawings themselves may be finished, those sent in for any competition can hardly be other than hasty conceptions formed on the spur of the moment. This want of deliberate study, of after-reflection between the general idea for a building being fixed upon, and its being actually begun to be put into execution, betrays itself sufficiently in almost all our public works. Yet, surely, it would be more discreet to allow the architect to make some *pentimenti*, than either to persist in oversights which might be detected beforehand, and so give occasion for durable and unavailing *repentance*; or than to alter and botch up when great advance has been made in the structure, as was the case with the New Palace. It is not very pleasant to consider what enormous sums have actually been flung away on that monstrous architectural abortion; but it would be still more monstrous, were we now to fling away our dearly purchased experience also. The burnt child, says the proverb, dreads the fire: then let us not burn our fingers and pockets again after the same silly fashion; that would be to manifest an incorrigible degree of stupidity, and one not so much deserving of pity as contempt. It is of very little use to regret mischief after it is committed, and, what is worse, which has been committed with our eyes open; and we may also spare ourselves all the wonder that is generally expressed on such occasions, for it need excite no astonishment that a system of mere jobbing should be productive of failure upon failure. It is time to break through such a deplorable system, and to postpone all private and particular interests to the interests of art.

There will, I trust, not only be a public exhibition of all the

designs for the Houses of Parliament, but this exhibition will be allowed to take place before a definitive choice of any one design be made; so that those with whom that choice ultimately rests shall be able to ascertain, in some measure, what is the general public opinion. That they ought implicitly and blindly to defer to it, I do not say; but, should it happen to be at variance with their own, it would lead them to weigh the subject more deliberately; after which they would, doubtless, be able to assign valid reasons in favour of their own selection.

What I would more particularly urge is, that, after all the designs shall have been most leisurely and diligently examined, and their respective merits discussed, should there happen to be no one of such paramount excellence as to be perfectly unexceptionable in every point, it should then be considered how far it would be practicable to unite in one design the several advantages and beauties of two or three. In such case, let a commission be formed of the authors of such designs; let them act in concert, and let us see what a cooperation of talent can effect. I am aware, that such a concert could not be got up without difficulty: each performer would consider his dignity compromised, and that he was unjustly compelled to share with others the credit that should be entirely his own. Yet there would be no occasion for making wry faces, as even the mention of such a scheme may cause some to do; since those who disapproved of it might take their revenge by withdrawing altogether: which is the very last thing in the world to be apprehended. At any rate, the experiment would be worth trying, since even should nothing come of it, matters would but stand as they did as first.

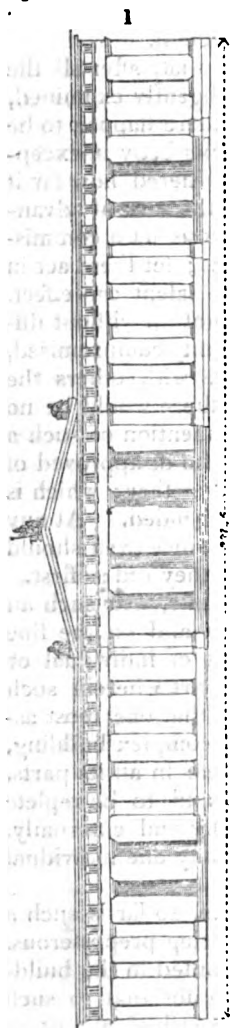
It is a matter of utter indifference to the public, *how* such an edifice as shall reflect honour on the country and on the fine arts is produced,—whether it be the result of individual or congregated talent; and if there be any one art wherein such cooperation is both feasible and advantageous, that one, most assuredly, is architecture. In an extensive and complex building, one, too, which ought to be perfectly complete in all its parts, together with all their minutiae and details, and to be replete with striking effect throughout, both internally and externally, it would be almost too much to expect that any one individual should perfectly succeed.

Although not sanctioned by modern practice, so far is such a combination as that here recommended from being preposterous, that it was, as frequently as not, the mode adopted in the buildings of the middle ages; and I have no doubt that to such organised unions of various talents is to be ascribed, almost as much as to any other circumstance, that excellence which stamps the *chefs-d'œuvre* of Gothic architecture.

London, Dec. 7. 1835.

ART. IV. *Description, Plan, Elevation, Sections, and Specifications of the Exeter Higher Market.* Designed by the late GEORGE DYMOND, Architect; and communicated by Mrs. MARY DYMOND, his Widow.

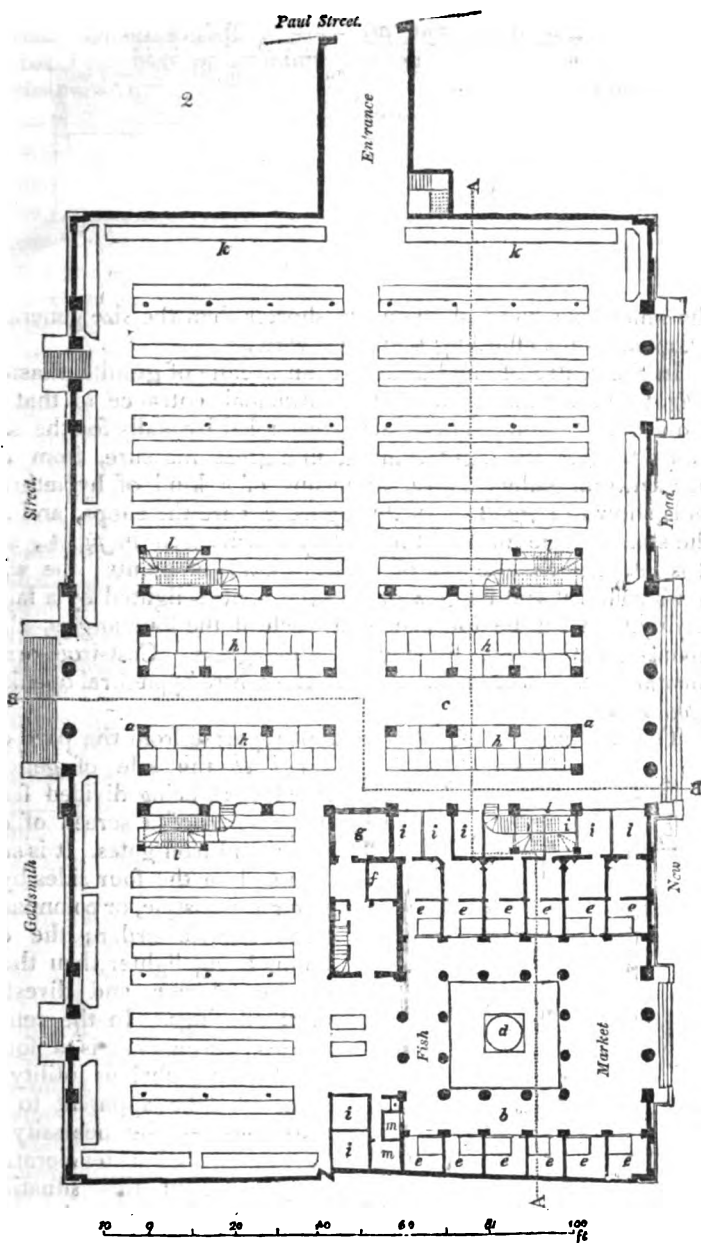
THIS market, the first stone of which was laid on the 8th of April, 1835, is intended for the sale of fish, pork in joints,



poultry, eggs, butter, potatoes, vegetables, garden stuff, roots, wares, flowers, &c. The general exterior character, it is thought, is simple and chaste, accompanied by as great a degree of beauty as circumstances seemed to admit or to warrant.

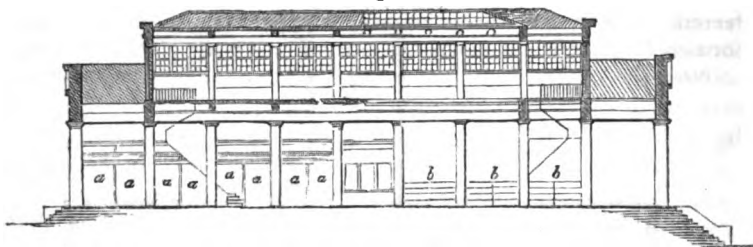
It is designed in a style that is considered grand; and it is somewhat decorated, though retaining all the simplicity and majestic beauty of the Doric order. No convenience, it is believed, has been sacrificed to architectural effect; but it is hoped that commodiousness and beauty have been successfully united. The apex of the pediment of the New Road front (*fig. 1.*) is crowned with a figure of Britannia, with her insignia; and the two lateral acroteria support figures of Peace and Plenty. The flutings of the columns are not worked out in their lower portions, to avoid the injury to which they would be subjected from baskets, goods, &c., taken into the market.

Great attention has been paid to the free admission of light and air into the interior. It will be seen by the plan (*fig. 2.*), that the shops, stalls, and benches, for the sale of the above-mentioned articles (except fish and flowers), are distributed over the area of the general market; and that the divisions of the stalls are not permanently fixed; so that it would be easy to make a greater or less number of them if required. The distances observed between stalls, in the markets of some of our principal towns, have been the criterion for their separation; though the average length of some of them is rather greater than usual, and, at



- d*, Fountain basin. vegetable stalls. *e*, Fish shops. *f*, Marketman's houses. *g*, Office. *h*, Fruit and *l*, Fruit and vegetable shops. *k*, Potato bins. *l*, Stairs to gallery *m*, Urinals.

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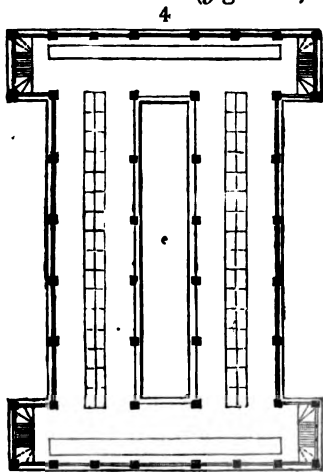


Section on the Line B B.

the same time, some of them are shorter than the size generally adopted; thus affording a greater variety.

In the centre of the building is an avenue of granite pilasters (*fig. 2. a a*), running from the principal entrance to that in Goldsmith Street. This space is occupied by stalls for the sale of fruit, &c.; the light coming, in a great measure, from the horticultural gallery above, by means of a kind of hypæthros, as is shown in *fig. 3*. In this figure *a a* are the shops, and *b b* the stalls. The form of this gallery will be seen in *fig. 4.*, and it is intended for the sale of different kinds of plants; the windows round it will be glazed, and the centre lighted by a large skylight; it will be approached at each of the four angles, thus giving great facility for ingress and egress. Cast-iron ornamental railings will be fixed round the centre hypæthral opening. (*fig. 4. c.*)

The fish-market (*fig. 2. b*) is kept separate from the part devoted to the sale of general articles (*c*), being divided from it by means of a screen of columns and iron gates. It is surrounded on the four sides by a covered peristyle, or colonnade, of the Doric order; the columns being lighter than those of the exterior, and divested of the flutings. In the centre of this fish-market is a fountain (*d*), the obvious utility of which will be apparent to all who consider the necessity of having as cool a temperature as possible in this situation. The shops in this market (*e e*) are fitted up with marble slabs,

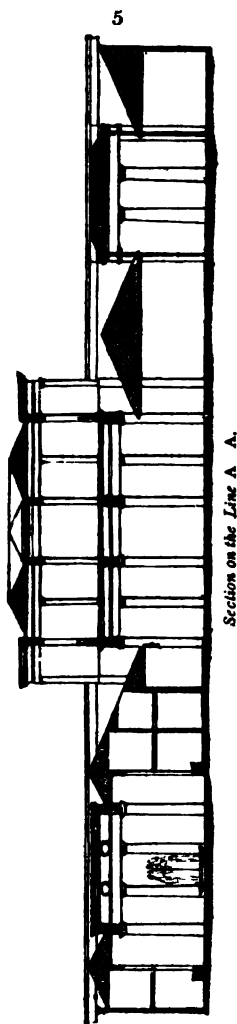


Plan of Horticultural Gallery.

having tubes for the distribution of water. These shops have rooms behind them, with store-rooms over, which may either

belong to them, or to the shops in the general market, if preferred. Under the northern, or lower, end of the market are formed two large vaults, running the whole depth of the building.

Near the centre of the market is the marketman's house (*f*), containing apartments for the residence of the person who will have charge of the market; and adjoining is an office (*g*) for the transaction of his business. The fruit and vegetable stalls are seen at *h h*; the shops at *i i*; the potato bins at *k k*; and the stairs leading to the horticultural gallery.



The sections (*figs. 3. and 5.*) show the intended arrangement of the roofs, with the spaces between them for the admission of light. If it should be thought that this market is too open, the spaces between the higher and lower roofs may be wholly closed with glass, or partially so, having only enough space left open to secure a tolerable degree of ventilation. Iron columns are introduced for supporting the roofs: but very much would have been added to the dignity and architectural effect of the interior, by the substitution of stone pillars, of the same character and dimensions of those supporting the gallery. They were not introduced in the design, from an apprehension that it would be considered they would occupy too much room, and intercept the view of the market. If stone columns had been introduced, still the required accommodation might have been obtained. The ceilings will all be divided into large and deep panels by the tie-beams of the roofs, which will traverse them from pillar to pillar: the ceilings will be plastered. The entrances will have open iron railings and gates upon the top steps, in front of the columns; the gates opening inward between them.

It was proposed to have, instead of the present entrance from Paul Street, a bazaar for the sale of fancy articles; the bazaar consisting of shops and dwellings, ranged on each side of a handsome avenue leading into the market. This design has been abandoned, at least for the present.

The pavements, and the interior steps, are intended to be of Penant stone, obtained in the neighbourhood of Bristol, and in South Wales. The walls of the basements, below the level of the columns and pilasters, are of granite; as, also, the external steps; the whole of the foundation, and the backing of the basement walls, are of the ordinary rubble stonework. The boundary walls, from the level of the pavement floor upwards, will be of brick, stuccoed on the outside to imitate freestone; and worked with even surfaces, and coloured, on the inside. The whole of the porticoes and pilasters of fronts, the entablatures, the columns, and the pilasters of fish-market, copings, cornices, sills, &c., will be of Bath stone. The smaller columns, supporting the roof (shown black on the plan), will be of cast iron; they will be hollow, and will serve as pipes to convey water from the roof gutters to underground drains, through which it would flow into the common sewers. The roofs will be formed of timber, and covered with large slates; having lead gutters and flats. The ceilings will greatly increase the comfort, lightness, and beauty of the market.

Water-cocks are liberally distributed about the market; and the pavement will be slightly currented, in different directions, towards small drains; the entrances to each having an iron trap, which will effectually prevent the escape of offensive effluvia.

Economy has been the inducement for preferring paving obtained in the neighbourhood of Bristol, or from South Wales. To pave this market with Yorkshire or Castle Hill flags, would incur a cost of about 500*l.* additional, without affording adequate advantages. Bath stone is preferred for a similar reason: no stone can be obtained which can be worked more easily; and, at the same time, it is very durable, and in appearance is preferable to most others.

This design is arranged with a view to its being durable and substantial; and the cost of the whole market will not exceed 19,000*l.*, including the bazaar.

SPECIFICATION OF ARTIFICERS' WORK TO BE DONE IN ERECTING THE PROPOSED HIGHER MARKET FOR THE CITY OF EXETER.

MASON'S WORK. — *An Office*, not less than 8 ft. by 10 ft. in the clear, is to be constructed for the clerk of the works. It is to have stone or brick walls, a fireplace with chimneypiece; and a small grate, found by the smith, is to be set in it.

Excavations are to be made to the extent necessary for carrying the various parts of the design properly into effect; including the lowering of the New Road to a uniform inclination from Fore Street to the corner of the market nearest to Paul Street. The road is to be sunk 9 in. below this general line, to admit of the surface of the pitching of the future street being finished to this line. The whole of the surplus matter, occasioned either by the excava-

tions or by the rubbish from any branch of the works, is to be carted away and deposited in a field at the back of Northernhay, as may be directed.

Mortar, for the rubble masonry, the brickwork, paving, &c., is to be made with well-burnt stone-lime and good clean sharp grit-sand. The lime is to be thoroughly slaked with an abundant quantity of water, as soon as it is brought on the premises, and immediately after well protected from the action of the atmosphere by a thick covering of the ingredient with which it is to be mixed; in this state it is to lie until it is quite cool, then to be mixed together in such proportions as shall be directed. This mixture is afterwards to be sifted through a wire sieve, and made up with such a quantity of water only as will render the compound of the consistency of damp sand; and it is to be well tempered in a pug-mill. It is then to be laid in heaps for from two to three weeks, being protected during this period, so as effectually to prevent its becoming dry or setting. Ultimately, it is to be well worked up for use. The mortar for the freestone-work is to be made of fine lime, putty, and bright-coloured fine sharp sand washed clean, well tempered together.

The old Bricks, which may be left after the removal of all the buildings on the site, are to be taken by the contractor, at a valuation made by two competent persons; one of whom is to be appointed by the market committee, and the other by the contractor. Such of these old materials as may be considered by the architect to be sufficiently good and sound may be reused in the new building.

Stones from Polkham Hill quarry are to be used for constructing the several parts of the masonry below the plinth level which are adapted thereto, and stock bricks, well made and burnt, for the remainder, except where other materials are specified.

The Walls are to be built upon footings projecting similarly to those shown in the drawing No. 5. [not figured, as being easily understood]. They are to be worked up true and perpendicularly, with fair even faces; being well bonded, and the interstices flushed up with mortar. The walls are to be carried up together, no part being raised above 3 ft. higher than another, until the respective heights are attained. The stones used for forming the groins are to be hammer-dressed. The internal surfaces of the walls in the market, and of the walls and arches in the vaults beneath, the backs of the parapets, and all other exposed parts of the walls, are to be neatly and properly flat-pointed. The two first courses of bricks, in all the walls above the plinth level, and every first course of freestone, are to be set with Roman cement. Stack walls are to be built, not more than 4 ft. apart, to support the sleepers of the wooden floors. The spaces round the masonry are to be filled in, and well rammed, as the works proceed, up to the surface levels.

Arch Centring will be supplied and fixed by the carpenter; and none is to be struck until permission shall have been given. No arch over any apartment, passage, &c., is to be turned until after the building is covered in; but proper skewbacks for them, as shown on the drawings, are to be projected from the walls during the progress of the building, for which the carpenter will supply templets. The spandrels are to be well filled with rubble masonry.

Chimney Openings are to have arches over them, and half-brick trimmer arches in front, where required. The flues are to be formed agreeably to the provisions of the 4th and 5th of William IV., chap. xxxv. sec. 18. They are to be well gathered in at their mouths, of a parallel size throughout, and carried up as straight as possible, having no sharp or angular turns; to be well and smoothly pargeted, and subsequently properly cored. Stoves, grates, boilers, &c., are all to be properly set with Stourbridge burrs, bricks, and clay, where necessary. The sides and backs of the stoves, and all unnecessary spaces in the fireplaces, are to be properly filled with masonry. The furnace stack is to be faced with sand-front brickwork, pointed.

Bonds, Lintels, Plates, Sleepers, &c., are to be properly bedded at their respective levels. Discharging arches are to be turned over all the lintels.

Hook-stones of Freestone, or other approved stone, of a large and sufficient

size, are to be properly worked into the quoins for hanging the doors of the vaults, and of the entrances to them, and the door entering towards the privy; and proper stones are to be inserted for the lock and bolt staples. Reveals are to be properly worked for all these doors, except those in the vaults. The hooks and staples, which will be supplied by the carpenter, are to be properly set, and run with lead.

Door and Window Frames are to be properly bedded and set, and pointed up against the masonry, but none are to be fixed in their places until the building is roofed and covered in.

Drains. — The earth is to be well rammed before any are laid. They are to be formed of mortared masonry, with arris bottoms, having paving tops and bottoms. They are to have not less than 3 in. current to every 10 ft. in length. They are to be of the various dimensions shown on the drawings; to be trunked up to the ends of the water-pipes; and those which pass down through the walls are to be well plastered on their insides with Roman cement. The drains are to be carried out in three places, as shown, and entered into the common sewer. Iron ejects [boxes without bottoms, sometimes called "shoes," as receiving the bottom, or foot end, of the pipe], 7 in. square, but without gratings, are to be set to receive the ends of all the water-pipes from the roofs; and similar ejects, but 5 in. square, are to be set to receive the ends of the water-pipes from the fish stalls. These ejects are to be well set with Roman cement, and trunked up, where required, with brickwork; which also is to be set with Roman cement: a 7 in. iron eject, having a grating, is to be set in Roman cement, to the mouth of every surface drain.

The Privy is to have a 10-in. iron eject, which is to be well trunked up with brickwork; the whole being set with Roman cement.

A Sink of solid hard stone, as shown by the drawings [not here figured], is to be properly set in the scullery upon a stack, which is to be faced with sand-front brickwork, and pointed. The sink is to have a 7-in. iron eject, set with Roman cement; and its drain is to be properly trunked up with brickwork, set with Roman cement. Scappled [hammer-dressed, see *Encyc. of Coll. Arch.*, p. 469.] paving, extending from the sink up to the window, is to be properly set and cramped all along against the wall at the back of it. Sinks of solid hard stone, 2 in. deep, and 14 in. by 14 in. in the clear, are to be set flush with the paving under the water-cocks, as shown by the drawings [not here figured]. Each sink is to have a 7-in. iron eject, properly set with Roman cement, and a drain, which is to be well trunked up.

The Fountain Basin is to have a scappled paving bottom; the whole of its interior is to be plastered with Roman cement, $\frac{3}{4}$ in. thick; its overflow pipe, for which proper provision is to be made, is to discharge into a 5-in. iron eject, well set with Roman cement.

Granite Works. — The whole of the plinths of the building, the steps and blocks at their terminations, the sills to the windows of the vaults, the kerb round the vault area, and the kerb in the avenue from Paul Street, are to be of granite twice well axed. The ashlar is to average not less than 12 in. thick; it is to be well bonded to the backings, and to be jointed, as shown in the elevation.

The Steps are all to be solid and square-nosed, properly rebated and set upon foundations of rubble masonry. Those to the side entrances in Goldsmith Street, and to the vaults, together with their landings or quarter spaces, are to be in one stone each. Those to the central entrance in Goldsmith Street, and to the two side entrances in the New Road, are to be in not more than three stones each; and those to the central entrance in the New Road are to be not more than five stones each. The top steps of all the entrances, the step at the Paul Street entrance, and the continued step under the columns in the fish-market, are to be of the dimensions, and jointed in the manner, shown on the plan. The steps are to be well joggled [set into each other, see *Encyc. of Coll. Arch.*, p. 38. fig. 50.], and run with lead at every heading joint; and they are to be similarly united to the blocks at their

terminations. These terminating blocks are to be sunk so as to bury the ends of the steps 1 in. deep; and they are to be united in each of the horizontal joints by two plugs of granite, 6 in. square and 8 in. long, let half-way into each stone in contact, and well set with Roman cement. Those to the vaults are to be sunk for iron balusters.

The Area Kerbs are to be not less than 12 in. by 8 in. They are to be jogged and run with lead in their joints, and properly sunk for the iron gratings, which are to be leaded to them. The kerb in the avenue from Paul Street, and the top step to the stairs to the vaults, is to be in one piece, and properly sunk for the railing, &c.

The square Columns, or Pilasters, to support the gallery and the staircases, and all those on the gallery floor, are to be of granite, three times well axed (except their capitals). Each shaft is to be in three stones, and united in each joint by a plug of granite let half-way into each stone in contact, and well set with Roman cement. The bottom courses of the lower ranges of pilasters are to be united to the pavement; and the bottom courses of the upper range to the masonry on which they stand; and the upper courses of all the shafts to their capitals in a similar manner. The plugs in the larger pilasters are to be 9 in. square and 12 in. long, and those in the smaller pilasters 5½ in. square and 8 in. long. The pilasters, or piers, which support the staircases, are also to be sunk 3 in. deep, to receive the ends of the cast-iron beams which are to support the ashlar. These beams are to be properly fixed and run with lead, which will be supplied by the smith. The horizontal joints are to be level throughout; and the perpendicular joints are not to have less than 4 in. square in every part.

Freestone is to be sound, free from holes, vents, and other defects; and, unless otherwise specified, from the quarries on Coombe Down, near Bath, and laid in its natural bed. The columns and pilasters (except those specified to be of granite); the architraves, friezes, cornices (except those which are shown to be of plaster); the tympanums, the acroteria, the facing to the entrance in Paul Street, the whole of the large chimney stack above the roof, through which it rises; the fronts and sides of the fish stalls, the walls of the fountain basin, the walls enclosing the staircases to the upper floor; all the walls on the upper floor (except those shown on the drawings to be of brick); the copings, and the window sills, are all to be of freestone. The columns and pilasters at the entrances, and the columns in the fish market, are to be united to the top steps by two, and to the blocks and in the joints of each course by one, plug of granite or other hard stone, let halfway into each stone in contact, and set with Roman cement. The plugs in the column and pilasters, and the pilasters at the entrances, are to be 9 in. square and 12 in. long, and those in the columns in the fish-market 8 in. square and 10 in. long. The pilasters in the fish-market are to be united to the pavement; and, in the joint of each course, by two plugs of granite or hard stone 3½ in. square and 6 in. long, let half-way into each stone in contact, and well set with Roman cement. The architraves are to be solid; they are to be united at their joints by dovetails of granite, or hard stone, let down flush into the stones in contact, and well set with Roman cement. The stone dovetails in the architraves over the entrance are to be 8 in. square in their middle, 8 in. by 12 in. at their ends, and 12 in. long. Those in the architraves over the columns in the fish-market, and the range of pilasters to support the gallery, are to be 6 in. square in their middles, 6 in. by 9 in. at their ends, and 9 in. long. Those in the architraves over the pilasters on the gallery floor are to be 4 in. square in their middles, 4 in. by 6 in. at their ends, and 8 in. long. Those in the architraves over the pilasters of the exterior, and of the fish-market, are to be 2 in. wide by 6 in. deep at their middles, 4 in. by 6 in. at their ends, and 8 in. long. The architraves over the range of pilasters to support the gallery, and those over the pilasters on the gallery floor, may be of Farley Down stone. The architraves over the columns and pilasters at the entrances, those over the columns and pilasters in the fish-market, those over the pilasters to support the gallery

floor, and those on the gallery floor, are to be united to the capitals on which they rest by two plugs of granite, or other hard stone, let half-way into the capitals; and one let half-way into each block of the architrave which bears upon it, and well set with Roman cement. The plugs in the architraves of the entrances are to be 4 in. square and 6 in. long; those in the architraves in the fish-market, and in the lower gallery range, are to be $3\frac{1}{2}$ in. square and 5 in. long; and those in the architraves on the gallery floor are to be $2\frac{1}{2}$ in. square and 4 in. long. The top beds of every cornice, and the copings, are to be joint-bedded; to be set with Roman cement in the joints; and to be united at every joint by two dovetails of freestone, let in flush, and well set in Roman cement. The dovetails to the cornices being 4 in. square in their middles, 4 in. by 8 in. at their ends, and 8 in. long; and those to the copings being 2 in. square at their middles, 2 in. by 4 in. at their ends, and 5 in. long. The copings are to project not less than 2 in. over the walls, and they are to be throated [grooved] under both edges. The walls of the fountain basin are to be united in each perpendicular joint by a dovetail joggle of the whole depth of the joint, well run with lead. The window sills, both those of freestone and those of granite, are to be in one stone each, except those of the gallery floor. They are to be worked as shown in drawing No. 3., and properly set hollow. Those of the gallery floor are to be in three stones each, and united at each joint, and each end of the pilasters by a strong iron cramp run with lead. All the freestone work is to be well and properly bonded in every part, to be jointed, as shown by the drawings; and it is to be well and properly cleared off. All the mouldings, flutings, &c., are to be of the size shown by the drawings, after they are cleaned off in the building.

The Moulds for the freestone-work are to be accurately cut in sheet zinc, and submitted for the approbation of the architect previously to their being used.

Paving is to be properly scappled, squared, and jointed, and bedded in mortar upon hard and dry rubble which has been well rammed. That under the large stalls in the centre of the market is to rise 2 in. above the general level, being scappled on the edges forming the steps. The steps shown in the urinals, &c., are to be formed in the pavement by setting paving stones upon risers of brick, flat in the men's; and brick on edge in the women's: the edges of the stones forming the nosing being scappled. The whole of the pavement is to be properly currented towards the various traps, drains, &c. The stones under the granite pilasters, the iron columns, and those under the columns at the entrance from the fish-market to the general market, are not to be less than 6 in. thick. Those under the granite pilasters are to be not less than 2 ft. 9 in. square; and they are to be cut away, when required, for the sinks. Those under the iron columns are to be not less than 2 ft. square, and each is to have a hole through the centre for the water to pass through. Those under the columns at the entrance from the fish-market to the general market are to be jointed as shown on the plan. No paving stone is to measure less than 3 ft. superficial, nor to be less than 2 in. thick. The steps to the fish shops, and to the lobby of the marketman's house, are to be solid, square-nosed, and scappled. The whole of this is to be of Penant stone from Newport in Monmouthshire, or Stapleton or Hanham in Gloucestershire.

Gratings of cast iron, 9 in. by 3 in., are to be fixed in the pavements or walls, for the admission of air under the wooden floors (ten will be required); and proper air-ducts are to be formed from them, and from those fixed by the carpenter and under the floors.

Hearth Slabs of Painswick stone, rubbed smooth; and 21 in. wide, are to be set in front of the fireplaces, except in the paved apartments.

Chimney-pieces of Freestone, plain, having proper jambs; mantel-shelf, and nosings complete, are to be fixed to all the fireplaces. All the fireplaces are to have proper inside hearths; and freestone slips, cover, and returns are to be fixed to the grates.

The *Potato Bins* are to be formed, as shown by the drawings [not figured],

of paving stone $2\frac{1}{2}$ in. thick ; and are to be sunk one inch into the pavement, and to be well cramped and run with lead on the top edges at the meeting joints. The outer faces and the top edges of the bins are to be tooled, and the other parts scapped both inside and out.

Fish Stalls, worked as shown by the drawings, are to be formed of white-veined marble slabs, set upon freestone ashlar and brickwork. The slabs are to be polished on every part exposed to view, and they are to be sunk, &c., for cocks, drains, traps, &c.

Grooves are to be made for the flashings, &c. ; and drains and holes for the water-pipes, &c. Proper holes and sinkings are to be made, where necessary, for the iron works ; and proper assistance is to be rendered to the smith and plumber in fixing the various parts of their works. The mason must allow, in his tender, 180*l.* for the cost of three statues delivered to him at the building in Exeter. The figures are to be set on the pediment towards the New Road, as shown on the drawings. They are to be united to the acroteria, and the several blocks to each other, by plugs of hard stone set with Roman cement. The sculptor, or his agent, will superintend the setting of the figures ; but, from and after the arrival of the sculpture, or any part thereof, at the building, the contractor for the mason's work will be liable to restore and make good any damage that may accrue thereto ; and he will be subject to the several conditions of the specification in respect of the sculpture, as he is for the other parts of the work.

CARPENTER AND JOINER.— *An Office*, not less than 8 ft. by 10 ft. in the clear, is to be constructed for the clerk of the works. It is to have a roof ; a boarded floor ; a door, with lock and key ; a double-hung sash window, having proper fastenings ; and a desk, not less than 5 ft. 4 in. long and 2 ft. 8 in. wide, which is to have a flap and lock and key.

A Hord Fence [fence for enclosing materials] 8 ft. high, having proper and convenient doors and gates for free ingress and egress and security, is to be erected so as to enclose completely the whole area of operation.

Timber is all to be well seasoned (for which vouchers must be given, if required by the architect), of the best quality of its kind, perfectly sound, free from sap and large and dead knots ; and that for the joiner's work is also to be dry. The timber for the sleepers under the ground-floor joist, and the sills for the sash-frames, is to be of oak of English growth. That for the ceiling joist, and the panels for the framing, is to be Quebec yellow pine ; and the remainder is to be Memel yellow fir, unless other timber is specified.

Scantlings and sizes are to be of the full dimensions figured on the drawings, or mentioned in the specification, when the works are finished and cleaned off in the building.

Casings are to be fixed to protect the freestone works which cannot properly be protected from injury by bricks.

Centrings are to be properly made and fixed for the arches, and for the apertures or recesses where required ; also proper turning pieces and uprights for the doorways, windows, &c. ; none of which are to be struck or removed until permission shall have been given. Proper templets are also to be supplied for working the skewbacks of the arches.

Lintels are to be laid over all the apertures or recesses in the walls where required, and are to be 1 in. thick for every foot between the points of support, of the full width of the thickness of the masonry they have to support, and bearing at least 6 in. on the walls throughout their width at their ends.

Wood Bricks are to be supplied to be worked into the walls, to afford proper fixing for the joiner's work ; also blocks and bracketing ; and whatever else may be required for fixing the joiner's and plasterer's work completely, are to be provided and fixed.

Beaded or Arris Staves, as may be directed, are to be fixed to the interior plastered quoins and heads. They are to be properly mitred at the angles where they meet.

Grounds, properly wrought and levelled or ploughed, are to be fixed for all the skirtings, where required.

Bond Timbers, $4\frac{1}{2}$ in. by $1\frac{1}{2}$ in., are to be laid horizontally in the brick partitions; there being not fewer than two bonds between each floor and ceiling. The pieces are to be in long lengths, and are to be united, where necessary, by scarfs or notches, as the case may require. The bonds are to continue through the openings, and not to be cut out of them until permission shall have been given.

Joists, quarters, ceiling joists, and rafters are never to be placed more than 12 in. apart from centre to centre. All timbers, where required, are to be well cogged, and secured down upon the plates. The plates are to be in long lengths, and well united, where necessary, by scarfs or notches, as the case may require. The floor joists are to be trimmed for the openings, fireplaces, and flues; every trimmer joist being one eighth of an inch thicker for every joist it has to carry. The joists are to be properly braced by herring-bone struts, firmly fixed between them in rows not more than 5 ft. apart. The ground-floor joists are to be $2\frac{1}{2}$ in. by 5 in., and their sleepers $2\frac{1}{2}$ in. by 4 in. The ceiling joists are to be properly braced with pieces nailed upon their backs, at distances not exceeding 4 ft.

Roofs are to be constructed as shown by drawing No. 5. [not figured]. The various parts are to be properly framed and fixed; being nailed, strapped, and bottled together, as may be required. The gutters are to be on proper bearers, having currents of $1\frac{1}{2}$ in. to every 10 ft. in length, and $1\frac{1}{2}$ -in. drips, as shown. The gutters and their sideboards are to be seven eighths of an inch thick. Proper pieces are to be fixed to tilt the slates; and $\frac{7}{8}$ -in. square fillets, for the lead to be dressed over, are to be fixed at the sides of the gutters, valleys, and at the ends of the roofs; where, also, a board, 3 in. wide, is to be fixed upon the slate battens. The boarding of the flats is to be seven eighths of an inch thick, well nailed. The rolls are to be $1\frac{1}{2}$ in. by $1\frac{1}{2}$ in., fixed as shown; and $1\frac{1}{2}$ -in. ridge-poles are to be properly fixed with irons, which are to be not more than 4 ft. apart. The shoots shown at drawing No. 5., section at N, are to be supported by strong irons, not more than 3 ft. 6 in. apart, let in flush on their insides, and screwed; and the other shoots are to be similarly supported or strengthened, where necessary. Shoots, 6 in. by 8 in. in the clear, formed of stuff $1\frac{1}{2}$ in. thick, and calculated to receive lead, are to be properly fixed to convey water under the roofs, as shown by the drawings. Holes for the escape of water are to be made where required; and proper cesspools, &c., are to be formed. The beams which meet over the iron columns are to be united with iron straps, and bolts let in flush, as shown by the drawings. All the beams are to be wrought and moulded as shown.

Quarter Partitions are to be trussed and framed with heads, sills, braces, and studs. The studs at the doorways are to be 3 in. by 4 in., and other studs and the braces 2 in. by 4 in.

A Steam Draught is to be properly formed over the furnace, with $1\frac{1}{2}$ -in. by 3-in. studding, &c.; and it is to have a $\frac{3}{4}$ -in. beaded casing at its bottom to stop the plastering.

The Furnace is to have a 3-in. kerb and a 1-in. ledged cover, having a proper handle.

Sashes and Frames are to be fixed to the window apertures in the gallery and its staircases in the marketman's house, and to the window apertures in the vaults. The sashes are to be 2 in. thick, moulded with $\frac{1}{2}$ -in. bars, to be doweled and franked at every meeting bar; double-hung with best patent lines, brass axle, pulleys, and iron weights. The frames are to have $1\frac{1}{2}$ -in. pulley-styles with pocket-pieces in them, proper beads, $\frac{3}{4}$ -in. casings, and $2\frac{1}{2}$ -in. sunk sills of oak, and proper parting and stop-beads, slips, &c., complete. Those to the house are also to have good spring-sash fastenings. Sashes similar to these are to be fixed in $1\frac{1}{2}$ -in. rebated recesses in the room behind the staircase, as shown in the section on the line R R; in the furnace-room, and in the rooms behind the shops, as shown in the sections.

Shutters. 1½-in. thick, framed and moulded and clamped back flaps are to be hung with 3-in. butts, and strong back-flap hinges, to the windows of the marketman's house on the ground floor. They are to have beaded grounds 1 in. thick to form boxings, having band mouldings corresponding with the door architraves; and 1½-in. framed and moulded backs, elbows, and soffits, also knobs and turnbuckles, and spring-bar fastenings.

The Skylight over the centre of the market is to be moulded 2½ in., with ½-in. bars, having proper beads, apron pieces, ridge roll, &c., as shown by the drawings. The skylight to the rooms over those behind the shops are to be 2½-in. thick, moulded, having ½-in. bars, and proper wide styles, heads, and apron pieces. These are to be 2 ft. 9 in. square in the clear lights.

The Shops in the general market are to be divided, and their fronts under the stalls are to be formed of 1½-in. ploughed and tongued and braced boarding. The entablatures, and boarding, &c., above the shops in the general market, and the fish shops, are to be formed as shown by the drawings; and proper assistance is to be given to the smith in fixing the iron trellis. The shutters are to be 1½ in. thick, the lower panels of those in the doorways being bead flush and square, and the others moulded and square. Each shutter is to be rebated and shod with rebated iron squares, fixed with screws. They are to be secured by two iron dugs and socket-plates at the head of each, and by wrought-iron bars, 2½ in. wide and 2½ in. thick. Each bar is to lock into a hook staple fixed to the middle shutter of each shop, to pass into an iron mortise-plate at each end, and to be securely fastened by a strong hinged hasp, staple, and padlock.

The brasswork for the shutters of the fish shops to bear upon is to be as shown, and properly plugged and screwed to the masonry.

Flooring is to be in boards not exceeding batten width, straight-jointed, well laid, with proper floor cramps, nailed, and having mitred margins to the hearths, &c., and tongued heading joints. That in the marketman's house, and in the shops and rooms behind them, is to be wrought; that on the ground floor being 1½ in. thick, and ploughed and tongued, and that on the chamber floor ¾ in. thick. The flooring in the rooms over the shops, and the rooms behind them, and in the gallery, is to be rough; that in the rooms being ¾ in., and that in the gallery 1½ in. thick. The floors in the rooms over the shops may be of Quebec yellow pine.

The steps to the shops, and those to the living-room of the marketman's house, are to be formed with 1½-in. treads, with rounded nosings, and 1½-in. risers. The risers to the shop steps are to have 9 in. by 3 in. iron grating let into them, and properly fixed for ventilating the floors. A similar grating is to be fixed in the boarding of the room behind the staircase (eleven will be required).

A Flemish Ladder, framed with 1½-in. sides and ¾-in. steps, is to be made for ascending into each room over the shops, and over the rooms behind them, having strong iron hooks at its ends, so contrived as to insert into iron eyes fixed in the casing, which is to be ¾ in., wrought and beaded, and projecting, to stop the plastering.

The apertures for ascending into the rooms which are over those behind the shops are each to have a 1½-in. trap-door, hung with 16-in. cross-garnet hinges, to fall down flush with the floors.

Stairs to the Gallery are to be formed of 1½-in. treads with rounded nosings, housed into 1½-in. plain strings. The treads are to be united by two irons in the place of each riser, as shown by the drawings. The irons are to be 1 in. by ¾ in., and fixed with screws.

These stairs are also to have 3½-in. by 2½-in. American white oak handrail, 1½-in. by 1-in. deal balusters, and iron balusters, not exceeding 5 ft. apart, on each flight.

The stairs in the marketman's house are to be formed (as shown on the plan (fig. 3.)), of steps having rounded nosings, and risers 1 in. thick, housed

into 1½-in. plain strings. The whole are to be well and properly fixed and supported.

Skirtings, as shown by the drawings, are to be fixed in the several apartments in the marketman's house, and in the shops and rooms behind them.

Doors. The entrance door to the living-room of the marketman's house, and that to the furnace-room, are to be 2 in.-thick moulded sash doors, with double-worked panels and fanlight over. The other doors on the ground and chamber floors (except that entering towards the privy) are to be 1½ in. thick and 6-paneled; those opening into the lobby of the marketman's house being moulded and bead flush, and the remainder double worked. The 1½-in. doors are all to be hung to 1½-in. rebated jamb linings and soffits, which are to be plain when under 7 in. wide, and formed as shown by the drawings where they exceed this width; those to the doors having fanlights are to have transom rails.

The doors 3 ft. wide or upwards are to be hung with 4-in., and the remainder with 3½-in. butt hinges. Architraves, moulded 5½ in. wide, are to be fixed to the door recesses in the living-room of the marketman's house. The remaining door recesses are to have rounded edges, projecting so as to stop the plastering; a 7-in. iron rim lock, having brass furniture, is to be fixed to each of these doors, and to that entering towards the privy. The doors in the living-room are each to have two 10-in. plate-bolts.

A Dresser is to be fixed in the living-room, as shown by the drawings, which is to have 1-in. cut end boards, fascia, and cornice; a 1½-in. top; four 1-in. grooved shelves; three drawers 5 in. deep, which are to be dovetailed; to have 1-in. fronts, 4-in. rims, glued bottom strips and runners complete. One of the drawers is to have a lift-out box half its depth, which is to have two divisions lengthwise; and the under part of the drawer is to have one similar division. There are to be two 1½-in. framed and moulded doors, 21 in. wide, hung with 2½-in. butts, and a 1-in. shelf in one of the spaces behind the doors; the central part is to be open, and to have a 1½-in. shelf 18 in. wide; a ¾-in. lining is to be fixed between the dresser top and the first shelf; the whole is to have a bottom fixed level with the plinth, which is to rise 4½ in. above the floor.

Two tiers of 1-in. shelves, 9 in. wide, and a rail and 6 hat-pins, are to be fixed in the closet under the stairs in the marketman's house.

The Privy is to be fitted up with 1½-in. seat, and 1-in. riser, both made to shift; a 1-in. clamped flap, hung with 2½-in. brass butts, and beaded backs and elbows 12 in. high.

The Urinals, division, and screen are to be formed of 1-in. wrought, ploughed, and tongued, and braced boarding, properly fixed and secured. The urinal troughs are to be 9 in. wide at top, and 3 in. at the bottom, and 10 in. deep in the clear, being formed to receive lead of stuff 1 in. thick, which is to be wrought on the front.

The Pipes for the distribution of the water, which are exposed in the building, are to be properly cased, and narrow boards are to be provided for supporting them upon where required.

The Vegetable Stalls on the ground floor are to be formed as shown by drawing No. 8 [not figured]. The quartering pieces are to be 4 in. by 2½ in., fixed with an iron dug [pin], which is to be screwed to the lower end of each, and gotted [run in with lead] to the paving. Each stall is to have two of these pieces, on which are to be fixed two wrought brackets 1½ in. thick, and cut on their front edges, as shown, to receive the shelves. The shelves are to be ¾ in. thick, wrought on the upper sides and front edges, and securely fixed to the brackets. The risers are to be ¾ in. thick, wrought in front. The partitions, both at the back of and between the stalls, are to be ¾ in. thick, wrought, ploughed, and tongued braced boarding. The capping is to be 2 in. by 2 in., grooved to receive the partitions; six inches above each central capping is to be fixed a board ¾ in. thick and 6 in. wide, which is to extend the whole length of the stall, and to be properly secured by iron, screwed to the capping and to the board.

Doors are to be formed under each set of shelves, as shown, being similar to the partitions, and hung with 12-in. cross-garnet hinges; and each door is to have a 4-in. dead lock.

Fittings of the Shops on the ground floor. The bracketings, shelves, and risers are to be similar to those of the vegetable stalls; the quarterings are to be 3 in. by 3 in., framed into 3-in. by 3-in. wrought uprights. The ends of the stall next the doorways are to be closed up to the shelves with $\frac{3}{4}$ -in. boarding, similar to the partitions of the previously described stalls. Each stall is to have one of these framed quarterings. The shelves are to be properly supported by brackets fixed to the partitions between the shops.

Benches on the Ground Floor. The tops of the benches are to be $1\frac{1}{2}$ in. thick, wrought on the top sides, and edges ploughed and tongued at the joints, and secured to the supports by strong 3-in. screws screwed upwards into the tops. The supports are to be formed, as shown, of $1\frac{1}{2}$ -in. elm uprights, properly mortised into 2-in. by 4-in. heads and 1-in. by 4-in. horizontal braces, which are to extend the whole length of the benches, to be properly fixed by strong key wedges, one on each side of the uprights, which are to be secured to the pavement by two iron dugs to each, properly screwed to the uprights and gotted to the pavement. The double benches at each end of the market are to be formed in a similar manner to the other benches; but having the supports the whole width of the double stall and two horizontal braces. The divisions are to be 2 ft. high above the tops of the benches, formed of framing 1 in. thick, with $\frac{3}{4}$ -in. panels, and having 2-in. by 2-in. capping, grooved to receive the top rail. There is to be a mullion over each upright of the stalls, and one between each, which are to be properly supported by strong iron squares on each side, screwed to the mullions and to the top of the bench, into which they are to be let flush. A shelf 8 in. wide and 1 in. thick is to be properly supported above the benches, by an iron bracket fixed to each mullion.

The Stalls in the Gallery. The brackets, shelves, and risers are to be similar to those before described. The quarterings forming the supports are to be 3 in. by 2 in., there being two to each stall. The partitions and their cappings are also to be similar to those already described; and these stalls are also to have name-boards fixed above the central capping, as described for the vegetable stalls on the ground floor. All these braced boarding partitions on the paved floors are to be secured to the pavement by iron dugs properly screwed to them and gotted to the pavement, not more than 2 ft. apart; and those in the shops are to be fixed by screws to strips nailed to the floor.

The Benches at each end of the gallery are to be formed as those on the ground floor.

Locks, Bolts, and other fastenings, are all to be properly put on and fixed with screws. Hinges are also to be fixed with screws.

SMITH'S WORK. — *An Office,* not less than 8 ft. by 10 ft. in the clear, is to be constructed for the clerk of the works: it is to have a small grate.

The Iron Columns supporting the roofs are to be cast, as shown by drawing No. 9. [not figured]. They are to have heads, holes, &c., as shown, to convey water from the gutters to the drain; ejects to be well united, and run with lead at their junctions; to be bedded upon sheet lead at their bases, and properly fixed perpendicularly.

The Beams to support the ashlar of the staircases are to be let 3 in. into the stone work at each end, and properly fixed and run with lead.

Wrought Bars 1 in. in diameter, and not exceeding 4 in. apart, are to be fixed to the vault windows in Goldsmith Street. They are to be properly gotted into the sills and heads, and to pass through a rail-bar $2\frac{1}{2}$ in. by $\frac{1}{2}$ in., which is also to be let in and gotted to the masonry.

Wrought Gratings, formed of 1-in. by $1\frac{1}{2}$ -in. frames, and $\frac{3}{4}$ -in. by 1-in. bars $\frac{7}{8}$ in. apart, are to be properly fixed to the kerb of the area in the New Road; and that part of the window which rises above the grating is to be protected

by bars similar to those of the windows, but riveted to a frame which is to be gotted to the masonry.

The Railings and Gates at the Entrances to the markets, and at the entrance from the fish-market to the general market, are to be formed as shown by the drawing No. 9. [not figured]. The large standards, and the ornamental heads, are to be of cast iron; the whole of the remainder is to be of wrought iron. The heads are to be attached to the bars by proper screws. The gates are to be hung as shown; the bottom hangings being steel bolts and caps. Those to the Paul Street entrance are to be hung so as to clear the inclined pavement. The large standards, and the bars between them, &c., are to be gotted into the stonework. Each pair of gates is to have a strong spring bolt, which is to be let down into an iron socket fixed and leaded into the stonework, and an 8-in. lock, which has brass wards and bolt, and large blacked knobs, also knobs and sham to match the lock. The bolts are to have hinged joints and eyes, and the locks are to be contrived so as to lock through the bolt eyes when the bolts are put down, and into the shams of the locks at the same time.

The Railings and Gates to the Vault Entrance in the avenue from Paul Street are to be as shown by the drawings. The gate is to be hung as the others, and it is to have a good lock with large blacked knobs. The top rail and railing are to be continued down to the foot of the stairs, as a handrail and balusters. The whole is to be properly fixed and gotted to the masonry. Strong fall-catches are to be properly fixed and gotted to the masonry, to secure each gate in its proper position when open; and proper stops are to be fixed, to prevent their falling too far back.

The Gallery Railings are to be of cast iron, the separate parts between the pilasters being each in one piece. The whole is to be properly fixed and gotted to the pilasters.

The Iron Trellis over the fronts of the shops is to be formed of wrought-iron rods, halved together, and secured with lead ornaments, as shown. Each separate piece is to have a frame; those to the $\frac{3}{4}$ -in. rods being $\frac{3}{4}$ in. by $\frac{3}{4}$ in., and those to the $\frac{1}{2}$ -in. rods being $\frac{3}{4}$ in. by $\frac{1}{2}$ in. The frames are to be drilled, and properly fixed to the woodwork with screws.

An Economical Kitchen Range, not exceeding 4*l.* in value, is to be supplied for the living-room.

A Sham Stove, 20 in. wide, low metal, is to be supplied for the office, for each of the bed-rooms, and for each of the rooms connected with the shops, and having fireplaces.

A Copper Furnace, substantially made, which will contain 80 gallons, and weigh 112 pounds, is to be supplied for the furnace-room, and also a complete set of iron-work for a proper furnace fireplace. The furnace is to have a stout 2-in. brass cock, of sufficient length to project properly beyond the brickwork. The weight of the furnace is to be exclusive of the cock.

PLUMBER'S WORKS.—*The Flats, Gutters, Ridges, Hips, and Valleys* are to be laid with cast lead, weighing 7 pounds to the superficial foot. The shoot-gutters, the shoots under the roofs, and the urinal sinks are to be lined with milled lead, weighing 5 pounds to the superficial foot; 5-lb. milled lead is also to be used for the flashings, the lead to the skylights, that at the ends of the roofs, and over the heads of the tiles of the lean to roofs, and that round the chimney stacks, &c. The lead in the gutters is to turn up 8 in. under the slates, where it is to be dressed over a fillet; and 5 in. against the walls, where it is to be well secured by flashings, which are to be let into the masonry, and well fixed. The ridges and hips are to be 20 in. wide, and well secured. The valleys are to be 18 in. wide, and dressed over a fillet on each side. The lead in the shoot-gutters is to turn up under the slates, and to be there dressed over fillets, as in the other gutters; and it is to turn down, and to be dressed over the squares of the mouldings, and neatly trimmed off.

To the eaves of the roofs over the urinals are to be fixed semicircular cast-iron shoots, 5 in. in the clear diameter, which are to be supported by strong

iron holdfasts fixed not more than 3 ft. 6 in. apart with screws. The lead at the ends of the roofs, and over the heads of the tiles of the lean to roofs, is to be 10 in. wide, to be secured to the masonry similarly to the flashings. The former is to be dressed down on the boarding and over fillets, and the latter is to be properly dressed down over the slates. Proper escapes are to be made for the water from the gutters, shoots, &c.; and short pipes soldered where necessary. The water from the gallery roof is to be conveyed down to the lower roofs through pipes 3 in. in the clear, made of 5-lb. milled lead, having snow boxes; and from thence to the drains through iron D pipes 4 in. in the clear. The water from the lower roofs, which does not pass off through the iron columns, is to be conveyed down through iron D pipes, 2½ in. in the clear. The wash from the men's urinal sinks is to be conveyed into the drain through a 1½-in. middle substance patent pipe, which is to have a D trap and a rose strainer.

The Cistern is to be lined with cast lead, the bottom weighing 8 pounds, and the sides 7 pounds, to the superficial foot. The cistern is to be lined 3 ft. deep, and the lead is to be well secured to the walls: it is to have an overflow pipe 2½ in. in the clear diameter, which is to stand 2 ft. 2 in. high in the cistern, and to descend down through the office; its upper part being made of 5-lb. milled lead, and the bottom length of cast iron. The lead is to be properly dressed down and round the several parts, and soldered where necessary: it is to overlap 4 in. at every drip, and not less than 3 in. at every other place. The lead pipes are to be well soldered together, and fixed with hooks, lead tacks, &c. The iron pipes are all to have moulded snow boxes, into which the water is to be properly conducted through short pipes soldered into the gutters, and also elbows at their bottoms to discharge properly into the drains. They are to be securely fixed and, where required, gotted to the masonry. Proper large rose strainers are to be fixed over all the water pipes.

Water is to be brought from the street main into the cistern through a stout patent pipe, 2 in. in the clear diameter, which is to be furnished with a large brass stop-cock having not less than 2 in. of water way, and also with a large and sufficient copper ball float to regulate the influx of water. The water is to be distributed from the cistern to the various parts of the market, as shown on the plans; and to the urinals through patent pipes of middle substance 1½ in. in the clear diameter, having branches to the different cocks of similar pipe, but ¾ in. in the clear diameter. The cocks are to be large brass cone cocks, having not less than ¾ in. in the clear of water way. The cocks are to be fixed 15 in. above the sinks; and those in the urinals are to be in convenient situations for washing them. Their branch pipes are to be well secured to the masonry; and each cock is to be fixed by strong iron staple stays, which are to be gotted into the masonry. Under the cock in the gallery is to be a sink, 14 in. by 14 in., but rounded at the corners, made of 12-lb. cast lead, which is to have a strong rose strainer, and a 1½-in. waste pipe branched into the nearest water pipe. Water is also to be distributed to the fish stalls through similar 1½-in. pipes, having branches to the several stalls of similar pipe, but ¾ in. in the clear diameter: these are to have brass stop-cocks, having not less than ¾ in. of clear water way; and the water is to be diffused over the surfaces of the stalls by means of brass tubes not less than ½ in. in the clear diameter, which are to be closely and firmly perforated, and properly fixed at the upper ends of the stalls, as shown by the drawings [not figured]. Each stall is also to have a 2½-in. square strong brass eject, with a stout perforated cover, which is to be made to the shape of the marble stall, and a 1½-in. waste pipe, properly united to it, and entering the drain eject. The branch pipes which supply the stalls are also to have properly soldered to them strong brass cone cocks, with ¾ in. in the clear diameter of water way. Water is also to be brought from the street main to the fountain through a stout patent pipe, 2 in. in the clear diameter, as shown by the drawings, which is to have a proper brass head and four fountain nozles of different and approved patterns. The fountain is also to have an overflow of similar 2-in. pipe, which is to be properly bedded and

fixed in the masonry, and to enter the drain eject. The fountain feeder is to have, at some convenient situation, a brass stop-cock, with not less than 2 in. in the clear diameter of water way, which is to be turned by means of a portable key handle. All these pipes, where they are carried under ground, are to be bedded in clay; and where they are carried through the building, they are to be properly fixed and supported, to assist in which, narrow boards will be supplied by the carpenter for situations where they may be required.

SLATER'S WORK. — *An Office*, not less than 8 ft. by 10 ft. in the clear, is to be constructed for the clerk of the works; it is to be tiled water-tight.

The Roofs (except those parts which are shown to be covered with lead) are to be covered with the best Welsh slates of the description called queens, laid upon 1-in. by 2½-in. heart battens of Baltic red fir, well fixed to the rafters. Every slate is to be securely side-nailed with two strong copper nails, so that every third slate shall overlap the head of the first not less than 3 in.

PLASTERER'S WORK. — *An Office*, not less than 8 ft. by 10 ft. in the clear, is to be constructed for the clerk of the works; it is to be plastered and set on the inside.

Mortar for the two first coats of plastering is to be made with well-burnt fresh white stone-lime and clean sharp sand. The lime is to be thoroughly slaked with an abundant quantity of water, and immediately well protected from the action of the atmosphere with a thick covering of sand, until it is quite cooled. It is then to be well mixed with the due proportion of sand; and both are to be sifted together through a fine wire sieve, and made up with such a quantity of water only as will render the compound of the consistency of damp sand, and then well tempered without any addition of water. The mixture is then to be laid in heaps for from three to four months, being well protected during this period, so as to effectually prevent its becoming dry and setting. Afterwards it is to be again thoroughly tempered, with the addition of but a small quantity of water; then well haired with a sufficient quantity of well-beaten long cow-hair, and well drawn out for use.

Stucco is to be made with good, sharp, and clean sand, and good well-burnt, fresh lias lime. This lime is to be thoroughly quick-slaked with water, sifted through a fine putty sieve, and mixed in due proportions with the sand, and such a quantity of water only as will render the compound of the consistency of damp sand. It is then to be well tempered, without any addition of water, and laid in a heap for from three to four months, being well protected during this period, so as to effectually prevent its becoming dry and setting. Afterwards it is to be again thoroughly tempered, with the addition of but a small quantity of water, and worked up fit for use.

Laths are to be properly nailed to all the ceilings, quarter partitions, battens, soffits, &c.

The Work is all to be floated and hand-floated.

The Ceilings, Soffits, &c., in the markets; the walls, partitions, ceilings, &c., in the marketman's house, except the lobby; the walls and ceilings in the shops in the market, and in the rooms behind them on the ground floor, and in the privy, are to be plastered two coats, and set in plaster and putty. The setting mortar for all the ceilings and soffits in the market, and that for all the walls, is to be coloured as may be directed. The mouldings, cornices, and cast ornaments, are all to be coloured as the setting mortar.

The Walls are all to be plastered with one coat of hair mortar against the flues between the joists.

The exterior Walls of the markets are to be plastered two coats, and finished in rough stucco, which is to be coloured in the mortar, so as to imitate freestone.

Skirting of Roman cement, 9 in. high, and projecting ½ in. beyond the face of the plastering, is to be run up in the fish shops, the privy, the scullery, the furnace-room, and the lobby.

The Moulds for the plaster mouldings are to be accurately cut in metal and horsed, and they are to be submitted for approbation previously to being used.

The Vaults, both on their walls and arches, and the walls, &c., of the stair-cases to them, are to be properly stopped, and twice white-limed. The brick walls in the markets, and in the lobby, are to be properly stopped, and coloured of a good stone colour, as may be directed.

GLAZIER'S WORKS. — The whole of the sashes, sash-doors, lights, skylights, &c., are to be glazed with good crown glass, which is to be well puttied and secured, and left perfect and clean, when all the works are finished.

PAINTER'S WORKS. — The whole of the woodwork, both interior and exterior, except every part of the stalls but the name-boards, the whole of the iron-work and the chimney-pieces, are to be painted with five coats of good oil and lead paint, in plain colours or white. The iron-work is to be properly cleaned and flamed where necessary. The whole of the work is to be properly knotted, stopped, rubbed down between the coats, and finished. The coves, slips, &c., of the fireplaces, are to be japanned black, until the colour properly bears out. The figures on the acroteria, and the upper surfaces and top squares of the cornices, copings, and other projections of the freestone-work, are to be painted with one coat of good oil and lead paint. The statues are also to have a coat of oil previously to being painted.

GENERAL CONDITIONS. — *The Tenders* for the performance of the work are to be delivered in separate amounts for each trade or branch, as they are divided in the specification. No tender will be accepted unless accompanied by a copy of the details of the estimate, showing the quantity of the works estimated for, the prices at which they have been calculated, and the several amounts carried out and added up.

The committee do not pledge themselves to accept the lowest tender, nor even any, should the amount be unsatisfactory to them. Great care must be taken not to injure or disturb any of the buildings adjoining the site; and they are all to be shored up, and also underpinned where requisite. Any damage that may be done to them during the progress of the works must be substantially and properly repaired. The walls, copings, roofs, gutters, tiling, plastering, painting, glazing, iron-work, &c., of all adjoining buildings, are to be properly finished, and made good to the new buildings.

The several contractors must afford each other all the assistance usually given, and necessary to the proper conducting of the works, arranging with each other for their mutual accommodation. Each contractor must keep a competent foreman on the works during the time the workmen are employed; and he must clear, sweep out, and remove from the building, as often as may be directed, all the rubbish or dirt occasioned by his works.

Parties tendering may view the site; and each contractor must provide and supply every kind of materials, carriage, labour, scaffolding, implements, and whatever else may be necessary to complete fully the whole of the works included in or appertaining to his branch of the works, with materials of the best quality of their respective kinds, in a sound, substantial, workmanlike, and perfect manner, according to the true and full meaning of the specifications and drawings, and the different directions and drawings that may from time to time be given by the architect or his agent; and he must repair at his own cost all injuries his works may sustain, from whatever cause, during the progress of the works; and the whole must be left, in every respect, in a clean, sound, and perfect state at the conclusion of the works. The works must be suspended during winter, or such other periods as the architect may direct; and the walls and other parts of the building must be secured from injury by frost or otherwise, in a manner approved by him.

The architect shall have full power and be at liberty to reject, and forthwith to cause to be removed from the premises, any materials which he may consider improper for their intended purpose, or not according with the intention of the specification; and, likewise, he shall have full power to cause any of the works to be altered which he may think improperly performed. The architect shall have the further power to direct any alteration or alterations in the works deviating in any manner from any of the original drawings or specifica-

tions; and the difference in the quantity of the work executed in consequence of any such alteration or deviation shall be ascertained in the usual way by admeasurement, and valued according to the list of prices given by the contractor or contractors in whose works such alteration or alterations are included; and the amount of such valuation shall be added to, or deducted, from, the amount of the original contract or contracts.

No claim shall be made by any contractor, for any material or materials that may have been rejected, nor for any work or works that may have been altered; neither will any extra charge or day-bill be allowed for anything or things expressed or implied by the specifications, drawings, or these conditions, nor for any extra or additional work, except only such work as shall have been expressly ordered in writing by the architect, or the market committee, as extra or additional work.

The decision of the architect shall be final and binding upon the contractor in all cases; and, should any contractor refuse or delay, beyond the space of 48 hours, to comply with any directions given in writing by the architect respecting any of the works, or any alterations, or respecting any of the workmen employed, or the number that should be employed, then and in each case the market committee shall have power and be at full liberty to suspend the proceedings of such contractor, and to take the whole of the works by him contracted for out of his hands, and cause them to be finished by any other person or persons they the market committee may choose to employ; and the expense occasioned thereby shall be deducted from the balance due upon the contract of the said contractor.

The money is to be paid by instalments, as the works proceed, at the rate of 75 per cent upon the value of the work done, as the architect shall certify in writing that such instalments become due; but he will not certify for any instalment less than 300*l*. The balance due upon each separate branch shall be paid, when he shall have certified in writing that the whole of the works of that branch are completely finished.

The whole of the buildings to be finished within _____ from the date of the contract. The contractor to give security for the due performance of his contract, himself in *£* _____, and two sureties in *£* _____ each.

Separate tenders are to be given for the following trades:—

No. 1. Mason.

2. Carpenter and Joiner.

3. Smith's work.

4. Plumber's work.

No. 5. Slater's work.

6. Plasterer's work.

7. Glazier's work,

8. Painter's work.

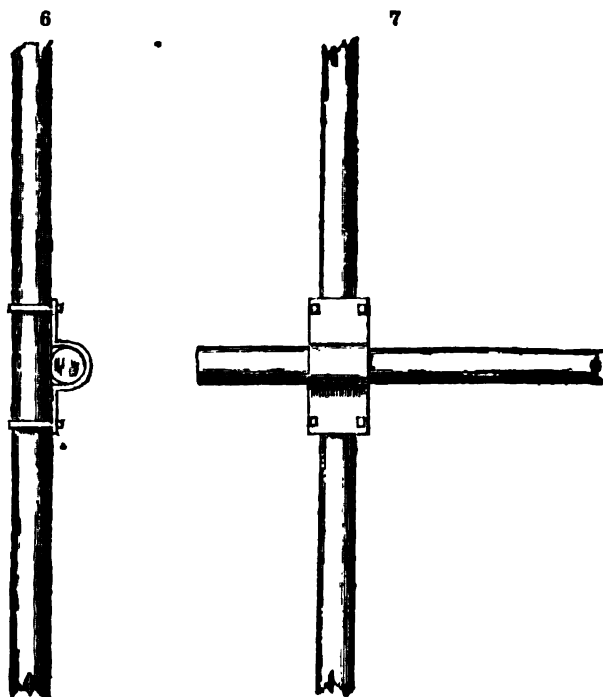
Tenders must be sealed up, and marked on the outside, "Tender for Work for the Exeter Higher Market." The tenders to be delivered at the Guildhall, on the _____ day of _____, by _____ o'clock, by the persons tendering, or some person attending on their behalf.

1835.

GEORGE DYMOND, Architect.

ART. V. *Mode of forming a new 'Holdfast for Scaffolding.*
By Mr. FREDERICK LUSH.

THE following fastening for scaffolding occurred to me the other day, on seeing some ropes which held the poles together becoming rotten, and in danger of giving way, owing to the length of time they had been exposed to the late wet and damp weather. These ropes had, most likely, been used on several similar occasions before; as, if they had been used only for the



erection of one building, they would not have yielded, unless they were at first of very inferior quality.

The kind of fastening I allude to is a wrought-iron plate (which would differ in size according to that of the pole), of the form which is represented in the accompanying diagrams, and the thickness of which should not be less than three eighths of an inch. By each end being made square, and wider than the diameter of the upright pole, there would be sufficient room for two holes to be made for the ends of a staple, secured to the pole by means of nuts screwed tight against the plate; the iron being bent in a semicircular shape in the middle, to receive the horizontal pole, or ledger. The same method would answer, if it were necessary to bind the putlock to the ledger; and also in the case of a brace falling obliquely on any other pole; but, where three or more meet, a strong rope must be had besides, or some other expedient devised to supersede the use of ropes at all. *Fig. 6.* is a side or end view of the fastening; and *fig. 7.* a front view of it.

Charles Square, Hoxton, Oct. 27. 1835.

REVIEWS.

ART. I. *An Historical Essay on Architecture.* By the late Thomas Hope. Illustrated from drawings made by him in Italy and Germany. Royal 8vo, 2d edition. London, 1835.

(Continued from p. 546.)

CHAP. IX. *Effect upon Architecture of the Introduction of Christianity, Occupation of Basilicas, and Use of ancient Materials.* Theodosius, in 389, ordained that Christianity should be the established religion of the empire. The pagan gods, and their altars and temples, were now destroyed, and a new description of temple, of larger dimensions, was required to be built. The halls of justice, from their large size and peculiar distribution, were found well suited for Christian worship; and hence arose originally the form of the Christian church, which prevails to this day.

"The body of these Christian churches, as of the principal pagan basilicas, was preceded by a portico of insulated columns, to this day preserving its primitive shape at Rome, in San Lorenzo, and San Paolo, San Georgio in Velabro, Sta. Maria, in Trastevere, remodelled in San Giovanni Laterano, and Sta. Maria Maggiore, and rebuilt in a more modern shape in St. Peter's and others." (p. 91.)

Chap. x. *Effect upon ancient Architecture of the Want of Glass, and the Changes produced by its Introduction.* The want of glass "caused the dwelling-house, for seclusion as well as for safety, to shun all windows outside; to have every aperture for light, as for egress, turned inwardly to a vast open court or impletorium, and only to present to the street, instead of the multifarious windows of modern habitations, an impenetrable dead wall: it even caused so many apartments of every sort to be left, for warmth and comfort, entirely destitute of windows, or apertures for daylight, of every description." Glass must, to a certain extent, have been in use in Pliny's time, since he describes, in his Laurentine winter villa, a glass door and curtain, at once dividing and uniting two rooms.

"Indeed, it seems to have influenced the whole domestic system of the ancients. By diminishing the difference, either between the inside and outside of the house, or between day and night, it caused them to transact much of their daily business in the public place, or forum, and at home to make the night much more the time of their most retired studies, or their most convivial meetings: it may even have tended to render to the first Christians their abode in catacombs and subterraneous places less irksome than a similar necessity would seem to us." (p. 111.)

Chap. xi. *Some Account of Round or Polygonic Buildings.*

"Rome, while yet pagan, possessed many structures, either round or polygonic; some destined for temples, some for tombs, some for various other purposes. Of the first class seem to have been those circular edifices with columns on the outside, one in the city itself, and the other at Tivoli, called

Temples of Vesta: perhaps, also, the Rotunda, now called the Pantheon; and the Decagon, called the Temple of Minerva Medica; though the very circumstance of a beautiful porphyry lavacrum found in the former, placed where the Thermæ of Agrippa seems to have stood, and of the Hygieian Minerva discovered in the latter, rather marks both alike as belonging to the number of those temples of health yclept public baths. Of the second order were the mausolea of Cecilia Metella, of Augustus, and of Adrian." (p. 114.)

Chap. XII. *Rise and Progress of the Architecture of Byzantium.*

"Perhaps Constantine, in 328, only transferred the seat of empire from the vast city of Rome to the small town of Byzantium, in order to evade the restraints with which, in his old capital, paganism still surrounded his new creed, and to afford Christianity, in his new creation, more room for development. In Constantinople, the proportion of Christians, from the first, exceeded that of the heathens. In Constantinople, at the earliest period, churches were wanted more than temples, and might be built, not merely on the outskirts, but in the very heart of the fast-increasing city. It is true that, at Constantinople, there were no pagan edifices very large or very numerous; neither was there a supply of magnificent materials pulled in pieces in order to be recombined into these new churches." (p. 121.)

"Previously to the extension of Constantinople the arch had always appeared single, but in this city first began to be seen, within the circumference of wider piers and arches, rows of more or less numerous smaller and closer columns, carrying smaller arches. Such we find in Sta. Sophia, supporting within the transepts the galleries for the women, and within the absides the conchs that close their summits. Such again we find at Ravenna, in the church of San Vitale, also built under Justinian, and such we find in considerable edifices in other parts of Italy, to which penetrated the fashion of Byzantium. Indeed, from those parts of Italy which derived their architecture immediately from Constantinople, we must in a great measure draw our inference of what existed in that capital itself. It is by no means on the spot where the first specimens of each new style successively introduced were first invented and displayed, that we may still hope to find them preserved. Where they first arose they also first fell. Constantly a prey to earthquakes and conflagrations, to internal commotions and external enemies, and having experienced in 1204, on being taken by the crusaders, the annihilation of all the works of art that had escaped from former disasters, Constantinople, when the last of its Constantines lost his empire and his life, possessed not perhaps one single edifice which the first Constantine, its founder, or even Justinian, had beheld. In Sta. Sophia, the capitals of the columns are a poor imitation of the Corinthian and its acanthus; in most Greek buildings they became a still poorer squared block, with unmeaning scroll or basket-work.

"From the day when Maximian, the colleague of Dioclesian, deprived Rome of the residence of a court, and Constantine of the dignity of a capital, that city had begun to decline, until at last it became little more than a heap of ruins and a nest of robbers, who within its very walls made the traversing of its streets unsafe without an escort, and caused every habitation to be converted into a tower of strength. Constantinople, on the other hand, had, by degrees, become the centre of all the remaining arts and industry, as well as literature of Europe; the only focus whence these spread their light to the farthest confines. The Greeks of Constantinople were the arbitri elegantiarum to the rest of the world, as those of Athens had been before. Hence also their new style of architecture was copied on every side, and first, in those parts of Italy only divided from the Grecian shores by the Adriatic; which, after they had ceased to belong to the annihilated empire of the West, were, under Justinian, for a while attached to the eastern dominions, and, from their vicinity as well as allegiance to Constantinople, kept up with it a more intimate intercourse." (p. 134—136.)

"Of the Constantinopolitan architecture, the lesser details followed the greater masses westward. Not only the single arches, with imposts generally elongated, sometimes with sides expanding beyond their base, or with summits pointed, scolloped, and curling up; but the lesser arches, inscribed within single larger ones, may each be seen in some of the different buildings, religious or civil, in Lombardy; and several of them united in the town-halls of Fano, Piacenza, Padua, Verona, Milan, and Como; whence it is that they seem to have spread throughout the rest of Europe, as features of what has since, more westwardly, been called the Lombard style." (p. 143.)

(*To be continued.*)

ART. II. *An Analytical Index to an Historical Essay on Architecture, by the late Thomas Hope.* Twelve engravings on wood, 8vo, pp. 89. London, 1836.

THIS work is by Edward Cresy, architect and civil engineer, who informs us, in a dedication to the present Mr. Hope, that he compiled it for private use, and as an easy reference to the great mass of information contained in Mr. Hope's work. The index, as the titlepage implies, is analytical, not alphabetical, and may be described as presenting the essence of the work, as far as regards matters of fact. The book will be useful to the possessors of Mr. Hope's *Essay*, by reminding them of its contents; and to architectural travellers on the Continent, more especially in Italy, by indicating to them the churches, and other public buildings, best worth seeing.

ART. III. *Select Specimens of Gothic Architecture, comprising the most ancient and most approved Examples in England, from the earliest to the latest Date; thus forming a complete Chronology of that admired Style, including Plans, Sections, Elevations, and Details, with an Historical and Descriptive Account of each Building and its Parts so illustrated.* By William Caveler, Architect. 4to. London, 1835.

THIS volume contains nineteen beautifully engraved plates, with letterpress description to each. In the address the author says, "I can assure my subscribers, that no trouble or expense has been spared to make the work worthy of their patronage, to render it useful as well as ornamental, and to give as much variety as possible; and, in the latter, I think I have succeeded, for the twenty plates now before them include specimens from the year 1270 to as late as 1520." One of these twenty plates was not completed in time, but will be given with the next part of the work.

The engravings are on such a scale as to be really useful to architects and workmen, and they are exceedingly well executed. We therefore strongly recommend the work to every architect, who is desirous of practising Gothic architecture correctly.

ART. IV. *Helps to the Building of Churches and Parsonage Houses ; containing Plans, Elevations, Specifications, &c.* By the Rev. William Carus Wilson, M.A., Rector of Whittington, Perpetual Curate of Casterton, and Chaplain to His Royal Highness the Duke of Sussex. 4to, seven plates. Kirkby Lonsdale, 1835. 5s. 6d.

“ THE design of the present publication is, to help forward the good work of building churches and parsonage houses; by showing, on the one hand, the great facilities which are now in existence for the accomplishment; and, on the other hand, what has been done in similar cases with great satisfaction, and at a moderate expense.”

The professional information contained in this volume is chiefly included in the following extract: —

“ The chief design of this publication is to show what has recently been done very successfully, and at a very moderate expense.

“ It would not be without considerable reluctance, that the chapel at Casterton should be brought forward as a model, were it not that it has met with the decided approbation of the many persons who have visited it, together with the Clergy Daughters' School, since its erection in 1833; and were it not, also, that it has been impossible to meet the many applications which have been made for the plans and elevations from various parts of the kingdom. If no other reason existed for the present publication, it is hoped that that of its being the only means of gratifying the wishes of persons engaged in similar undertakings will be deemed sufficient.

“ It is not for a moment supposed, that other plans, equally good, may not be adopted; but it is always a satisfaction to see what has actually been accomplished with the fullest success in all respects; and the following statement may, at all events, prove a valuable guide to those who are inexperienced in these matters.

“ The chapel at Casterton was built in the year 1833. It was intended, as well for the convenience of the township, situated at some distance from the parish church, as for the perfecting of the arrangements for the Clergy Daughters' School, on its removal from Cowen Bridge to Casterton. The congregations assembling in the chapel, as well as the advantages accruing to the school, have fully answered the twofold benefit which was anticipated. It was on the 15th of April that the first stone was laid; a blessing being sought by a little party of villagers, quietly gathered together, in the language of our collect, “ Prevent us, O Lord, in all our doings with thy most gracious favour, &c.” On the 5th of October, in the same year, the chapel was consecrated by the Bishop of Chester, in the presence of about fifty clergymen, and nearly all the families of respectability for several miles round.

“ The chapel, of which the plans and elevations are annexed, was calculated by measurement, to hold 480 persons, including the gallery, which contains about 130. But accommodation would easily be made in the whole, if necessary, for 500.

" It is built of limestone, and the stones are placed in course, but are very little hammered beyond what was necessary for securing the joints ; and, indeed, the rough appearance is preferred, as giving more the appearance of antiquity.

" The walls inside are done in stone finish, lined, and stone-coloured ; which gives a much more comfortable appearance than common plaster, and is a very slight extra expense.

" The open roof, with ceiling laid on the spars, cannot be too strongly recommended. It is most in church character, as far as appearance is concerned ; and, while no bad effect results to the voice of the clergyman, if common care be taken, it is most favourable for the effect of singing and the organ.

" At Hurst Green, where a church is building upon exactly the same plan, the situation being exposed, it was recommended to plank the roof entirely, like a boarded floor, before slating, in order to give additional security to the slates : this plan has certainly advantages. The spars are so contrived, as to present inside square compartments, which are smoothed, and will be painted oak-colour paneled ; superseding the necessity of plaster ceiling. The internal appearance, as well as the security of the roof, will be greatly benefited ; and, as the additional expense is only about 30*l.*, excepting painting, it is decidedly recommended in all cases.

" The gallery is appropriated to the Clergy Daughters' School and the organ. The rest of the church is free, excepting the hall and the minister's pews.

" The floors of the seats are all boarded : and, being raised six inches above the flags of the aisles, are dry and comfortable.

" Arrangements were made for heating the church by means of a descending stove, placed in front of the pews at the east end, with a hot-air flue passing along the north aisle to the west end : but it was not found to answer ; and the church is quite sufficiently aired by an open fireplace in the south-east corner, and a stove (which cost 7*l.* 10*s.*) placed at the west end, between the porch and the vestry doors, with an iron pipe going into the wall of the steeple, at a considerable height, and thereby warming the gallery.

" The situation of the reading-desk and pulpit is recommended, as taking the least possible room, and affording the fullest command of the congregation.

" The font, which is of black Dent marble, and was, in a great measure, the kind gift of Mr. Nixon, the marble manufacturer, stands in a recess at the front of the middle pews, directly facing the door of the communion rails. As the christenings are performed during the afternoon service, after the second lesson, with a view to the edification of the congregation, and the benefit of their prayers for the infant, the situation is decidedly the most convenient. A very neat portable font has been given to the new church at Stonyhurst, which answers every purpose ; not requiring even the expense of a stand ; as it might be placed, when wanted, on the communion table, from which the ceremony might be performed. The price is fourteen shillings ; and it is to be had at Sharpur's, Pall Mall East, London.

" The church, including painting, glazing, and all necessary expenses, was built for 700*l.*

" There was the privilege of burning lime in a kiln within half a mile, and the stone was given : but the quarry did not answer so well as was expected ; and it may be safely stated, that there are few situations in which the same edifice ought not to be erected for the same money. It will generally be found that stone will readily be given for such purpose ; and freestone will, in most cases, work at much less expense than limestone.

" A very considerable saving would be effected by adopting *random* instead of *course* walling. The steeple should be in course, and the body of the church might be left as it is walled, neatly pointed or covered with rough-cast, which is a very trifling expense. The rough-cast should not be white, but stone-colour.

" Random walls are just as likely to be dry as course walls ; and if not rough-casted, they might very soon be covered with Irish ivy, which has always a pretty effect upon a church ; and, so far from being injurious, has been clearly

proved to be beneficial: the large leaves acting like slate to throw off the rain; and the tendrils sucking out the damp from the wall.

"A clergyman, within a few miles of Casterton, has lately completely cured the damp in his parsonage by means of Irish ivy.

"The steeple is sufficient for four bells, and even more; but, as the strictest economy had to be observed, there is only one at Casterton. It is an exceedingly good one for the money. It was got from Mr. Mears, bell-founder, White-chapel, London; and cost 11*l.*, including stock, wheels, iron-work, brass roller, and rope, and carriage to Manchester: 12*s.* 7*d.* being deducted for ready money.

"Where an organ is desired, it is well to give sufficient time for enquiry; and there will seldom be any difficulty in meeting with a second-hand one at a reasonable rate.

"The Casterton organ came from the chapel at Highgate; where, in consequence of the building of a larger chapel, a larger organ was required. It was thoroughly examined by one of the first organ builders in London, and was pronounced well worth the money which was asked for it; and which was 40*l.* If this had not been purchased, one that would have been thought sufficient for the purpose, though much smaller and with only three stops instead of seven, could have been had in Norfolk for 30*l.*, nearly new, and only discarded by a gentleman to make room for a larger one.

"The organ at Casterton is played by the music-mistress at the Clergy School: some of the pupils will always be learning to play it, with a view to their own benefit in after life; as opportunities may occur of their being so employed.

"It is desirable that a church should be well spouted; and cast-iron spouts are recommended, only they must be kept well painted. Those at Casterton church came from the foundry at Kendal.

"The windows are glazed with diamond panes in lead, and square panes round the sides.

"The square panes are painted a light orange-colour, which has a very good effect; and the diamond panes on the whole of the south side are done in imitation of ground glass, to keep out the sun. The expenses of this is very trifling: indeed, all the windows in the church would have been done in imitation of ground glass for a sum scarcely exceeding five pounds.

"The two middle windows on the north and south sides have casements in the centre of the window, as have, also, the four windows in the gallery. The casements hang on a pivot, which is, on all accounts, the best mode of ventilating, and, especially, of keeping out the rain.

"The communion plate was got at Messrs. Rodger's, Sheffield, and the price was as follows:—

			£ s.
Sheffield Plate Chalice	-	-	1 11
Do. Salver	-	-	1 12
Best hard Britannia Metal Flagon	-	-	0 16
			<hr/>
			£3 19

"The expenses of consecration, including the previous notices, correspondence, and conveyance of land, amounted to 4*l.* 16*s.* 10*d.*

"There was a collection at the consecration which amounted to 67*l.*; and it might generally be taken for granted, that a collection on such an occasion would cover the expenses.

"It may be well to add, that, in the case of new churches, the duty is returned on all exciseable articles, if it be recommended by His Majesty's commissioners, through whose hands the application to the Treasury must be made. There was a drawback at Casterton, on the Baltic timber and glass, of 38*l.* I have been told that some deduction is made for American timber; but, as Baltic is infinitely preferable, it is strongly recommended to use nothing else: at all events, nothing but Baltic should be placed on the roof.

"The excise officer of the district will give instructions concerning the necessary papers for applying for the drawback.

"In some recent cases the pulpit has been made to have the appearance of stone by a preparation of sand; and is said to have a very good effect.

"The old English style of architecture, with lancet windows and buttresses, is decidedly the most satisfactory for an ecclesiastical edifice; but, whatever style or plan is adopted, it is strongly recommended to avoid the use of valley gutters. They are troublesome enough, especially in snow, in private houses, where there is every advantage of care; but in the case of a church, it is well to guard, as far as possible, against the chance of injury arising from the uncertain attentions of those who have the charge of it. If the snow is left to melt in a valley gutter, it must, unavoidably, find its way under the slate, and damage the interior."

In a future Number we propose giving the "Specifications for the work required to be done in erecting and finishing a church," together with the reduced engravings, provided we receive a favourable answer to an application which we have made to Mr. Wilson for permission to do so.

ART. V. *Report from Select Committee on Arts and Manufactures; together with Minutes of Evidence and Appendixes.* Fol. London, 1835. 3s. 6d.

It was our intention to quote from this *Report*, and to make some remarks on the evidence given by some of the persons examined; but, as the whole *Report* has been published in the *Mechanic's Magazine*, Nos. 639. to 643., and may be purchased for a trifle, we consider it unnecessary to occupy our pages with quotation; and shall confine ourselves to remarking, that the main scope of the evidence tends to show the great advantage to art that would result from the establishment of schools of design, libraries of books and engravings, museums, and, what was particularly gratifying to us to observe, public gardens. It was this recommendation of the establishment of public gardens, which principally induced us to prepare a long article on the subject, which will be found in the *Gardener's Magazine*, No. 69. for December, 1835, and which, we trust, will be found not altogether unworthy of the attention of architects.

ART. VI. *Literary Notices.*

THE Transactions of the Institution of Civil Engineers, in a demy quarto volume, which will contain about 350 pages of letterpress, and from fifteen to twenty very neatly engraved plates, price from one guinea to one guinea and a half, is preparing for publication.

A Practical Treatise on Locomotive Engines upon Railways is preparing for the press. This work is intended to show the construction, the mode of acting, and the effect of locomotive engines in conveying heavy loads; to give the means of ascertaining, on a view of the machine, the velocity with

which it will draw a given load, and the results it will produce under various circumstances and in different localities; to fix the proportions which are to be adopted in the construction of an engine, to make it answer any intended purpose; to show the quantity of fuel and water it will require, &c. It is founded upon a great many new experiments made on a large scale, in a daily practice on the Liverpool and Manchester Railway, with many different engines and considerable trains of carriages; to which is added an Appendix, showing the expense of conveying goods by means of locomotives on railroads. By Chev. F. M. Guyonneau de Pambour, formerly a student of the E'cole Polytechnique, and late of the Royal Artillery, on the staff in the French service, and Knight of the Royal Order of the Légion d'Honneur, &c., during a residence in England for scientific purposes.

Designs for Iron and Brass Work, in the style of the fifteenth and sixteenth centuries, by A. Pugin, Esq.; consisting of 27 plates of locks, keys, bolts, hinges, andirons, coffers, lamps, vanes, &c.; royal quarto, neatly bound in cloth; forming a second part to Pugin's *Gothic Furniture*; was lately published.

MISCELLANEOUS INTELLIGENCE.

ART. I. Domestic Notices.

ENGLAND.

THE Institute of British Architects held their first meeting of the session on December 14., Mr. Robinson, V. P. in the chair. A great portion of the evening was taken up with routine business, that had accumulated during the recess; many interesting letters were read from Foreign Academies and Architects, and numerous contributions were announced, pecuniary, literary and scientific.

A paper was read from Mr. Murray of Dublin, descriptive of the numerous Lunatic Asylums erected by him under the authority of the commissioners appointed by government, accompanied by drawings, and detailed statements of the expense in building, purchase of land, &c. &c.

A conversation took place relative to warming and ventilating buildings, and with reference to the investigation made by the House of Commons into those subjects, which it was proposed should be taken up by the Institute. Mr. Britton announced his and Mr. Brayley's intention to dedicate to the Institute their work (now in course of publication) descriptive of the ancient palaces of Westminster. Several new members were proposed; and, from the communications that took place, there is held out the prospect of an interesting session, and that the Institute is in the way of making good progress towards the attainment of the important objects it is calculated to embrace.—*C. F. Dec. 15. 1835.*

A new Chapel, with schools adjoining, in the Grecian style of architecture, situated on the left-hand side of Duncan Street, Islington, has lately been finished. The front is crowned with a pediment, supported by two Ionic columns (not fluted) and four pilasters, two being placed at the angles of the building. The columns are in a recess about 2 ft. deep, having a pilaster on the outer side of each, with two faces; one face being in a line with the angle pilasters and the front of the columns, and the other face in the recess. The entrance door is between the columns, having the usual architrave mouldings, with a pediment head supported by two trusses. On each side, between the pilasters, is a blank window. The flank elevations are alike, having six narrow circular-headed windows: the back elevation, not being very conspicuous, has been made plain. The whole of the chapel is of brick, except

the columns, pilasters, entablature, &c., which are in cement. — *Tyro. Wilmington Square.*

Improved Street Paving.— An improved mode of paving roads for declivities has lately been invented by Mr. Baddeley, which proves a great assistance to horses in carrying heavy loads; and, moreover, is likely to prevent accidents, which so frequently occur by their falling.

The stones, forming a continued series of ridges on the upper side, afford an excellent footing for the horses' feet in ascending and descending, and the friction of the wheels, from being greatly increased, is also a check to them in descending. Paving of this description has been introduced on Fish Street Hill, Snow Hill, and been very recently laid on Holborn Hill; surpassing every other method previously adopted. — *Frederick Lush. Charles Square, Hoxton, Oct. 16. 1835.*

New Street.— It is intended, early in the next session of Parliament, to apply for a bill to carry into effect the formation of a new street, commencing at Stamford Street, Blackfriars' Road, and terminating at the Town Hall, Southwark. Several meetings have been held on the subject, and plans drawn up for adoption. In a straight line, the proposed street is about one half mile 300 yards in length; and, should the bill be passed, it would be a great improvement to that part of the metropolis. — *Id.*

A very elegant Building, of the Grecian Doric, intended for offices, has been very recently erected in a court in Swithin's Lane, for Mr. Solomon Rothschild, from the designs of Mr. Davis of Bishopsgate. Most of the rooms are lighted from above, and the skylights are closed with shutters by means of machinery. The interior is enriched with ornaments belonging to the Ionic order, and the whole has a very picturesque appearance. It is much to be lamented that this building, the one adjoining, and others of a like description, are so concealed, instead of being situated in some public street or thoroughfare, where they could be constantly exposed to the public eye: but this, of course, cannot be attained. — *Id.*

King William Street is in great progress; and those houses already finished afford, by their varied appearances, some of the best examples of modern street architecture. In Smith and Payne's banking-house, nothing can surpass the internal accommodation; and every thing is done in a very workmanlike manner. On every floor there is a suite of apartments complete, kitchen, and other domestic offices, for the convenience of individuals who carry on business there. Others which are completed deserve attention, both with respect to their internal arrangement and external decoration. Whilst a little uniformity is preserved throughout the whole street, the eye is relieved by parts which differ from the general objects; thus carrying off that monotonous appearance which would otherwise exist. — *Id.*

Westminster Hall.— The casing of the inner walls with fine Portland stone is now quite finished; and, with the exception of paving the floor, little remains to be done. Nothing is to be done to the roof but dusting it. — *Id.*

The Charterhouse School.— Upwards of eighty workmen have been employed, for the last two months, in making alterations and additions to this establishment. The school has been much enlarged, on account of an intended increase of scholars, the present number being about eighty. A new lodge is also in contemplation, which is to be erected at a short distance from the present lodge. — *Id.*

The Mansion House.— The balustrade, &c., enclosing the basement upon which the portico stands, is being removed for the purpose of making the same in a line with Messrs. Smith, Payne, and Smith's new banking-house, so that carriage visitors, instead of being set down at the centre gate, and winding up the steps to the entrance door, will have to alight on either one side or the other. — *Id.*

Holborn Hill.— Various plans have, within the last thirty years, been proposed for getting rid of the steepness of this hill. The best of all these plans, in our opinion, is one by which it is proposed to raise the street at the

northern extremity of Farringdon Street about 10 ft., and lower the highest part of Holborn Hill 3 ft. or 4 ft., forming an irregular slope between the two points. The houses and the footpaths on each side might easily be adjusted to this change. At the bottom of Holborn Hill, the first floors would be turned into shops, and in the highest part of Holborn the shops, instead of being on a level with the foot pavement, would be two steps higher; or there might be two steps from the foot pavement to the street pavement; or both, if necessary. This is a crude outline of a plan which, we are of opinion, is decidedly the best; but we may be quite wrong, and, at all events, it is our duty to lay before our readers any thing new which occurs on the subject. The last plan, then, is designed by J. P. Burnard and Stephen Geary, architects. It proposes to cut into the houses on the north side of Holborn, from Hatton Garden to Snow Hill, and on the space so obtained to erect a level street on a basis of shops and entresoles. A neat lithographic engraving is given of these shops, and of the new range of houses which it is proposed to erect, beyond them, on the space cut out as before mentioned. The worst part of the plan is, that it leaves the steepness of Holborn Hill just where it was, as does every other plan but that which we have mentioned above. We cannot wish it success, because we do not consider it a radical improvement; however well it may look on paper, and in the prospectus, in which it is proposed to raise a capital of 350,000*l.*, to carry it into execution. We do not consider this a radical improvement, because it does not extend to all; for, by leaving the hill, and the shops on each side of it, there would be nearly as great a temptation to go up and down the hill as there is at present. No plan, therefore, which proposes to have shops on the hill, with its present slope, is, in our opinion worth listening to. — *Cond.*

A new Chapel is now being completed on the left-hand side of Upper Rosoman Street, Clerkenwell, called the Northampton Tabernacle. It is in the Italian style of architecture, and has been built from the designs and under the superintendence of Mr. John Blyth; its elevation is bold and yet neat. The interior is also finished in accordance with the same style of architecture as the exterior. The pulpit, which is supported by four Corinthian columns, is placed against the west wall, and faces the east. There are galleries on the north and south sides, with one opposite to the pulpit, which, with the side galleries, forms part of a circle: the whole are supported by cast-iron columns, well formed, and finished with neat fancy capitals. The ceiling is flat from wall to wall, and executed in compartments, in some of which, including the centre one, are introduced fretted air-gratings, having a very unsightly appearance: these ought to have been hidden by flowers, or some other kind of ornament; and, as it is not too late to effect this alteration, should these observations meet the eye of the architect, he will, I have little doubt, take it into consideration. I cannot help thinking, also, that the railing in front would have looked better had it been made parallel with the front of the chapel, and not with the ground, which has a considerable fall: this could have been avoided by placing the stone into which the railing is fixed upon three or four courses of brickwork (faced with seconds) at the end where the fall is. The expense of building the chapel is between 2000*l.* and 3000*l.* — *Tyro. Wilmington Square, Sept. 1835.*

King's Cross. — The statue of George the Fourth, now erecting at King's Cross, is on a new plan. It is formed of bricks and mortar, and by a working man. The finishing touches, however, bestowed by Mr. Geary, the architect, have rendered it not inferior to stone, at least to the eyes of common spectators. The extraordinary cheapness of a figure thus got up is its great recommendation: the cost does not exceed 25*l.* — *Id.*

Cambridgeshire. Fitzwilliam Museum. — On the 28th of last month, a meeting was held in the Senate House, for the purpose of fixing upon a plan for the new museum, about to be erected in St. Peter's College: out of thirty designs sent in, four were chosen, namely, those of Mr. Baldwin, Mr. Bassevi, Mr.

Poynter, and one without name, bearing the motto, "Palnam qui meruit feret." All the other designs were deemed to be finally excluded. Each member of the senate then gave a single vote for one of the four, and the plan of Mr. Bassevi was thus selected by an actual majority of the whole number of votes; the plan, however, is not finally adopted, until a syndicate yet to be appointed shall have reported to the senate that it is in conformity with the instructions originally given to the several architects.

I have no doubt, all those who have not succeeded will have their designs respectably returned, with thanks for the trouble taken; and not disfigured in the manner the "Exeter Market Committee" served the drawings sent in for their markets. I have a large drawing containing sections of a design I forwarded there, literally torn asunder, so as to completely deface the set of drawings. I should recommend architects about to compete, in future, to endeavour to obtain the names of the persons who are to perform the part of "judges," to ascertain if they had ever seen an architectural drawing, or know one order from another; and, further, if they desire to be successful, to have a "friend or two at court."—*Tyro. Wilmington Square.*

ART. II. *Retrospective Criticism.*

CENSOR, in reply to Mr. Perkins, on his Hot-water Apparatus. (Vol. XI. p. 473.)—Nothing is more natural than that Mr. Perkins should attempt a reply to my observations on his hot-water system. When writing that paper, I assured myself of a rejoinder; particularly when calling to mind that, in most cases, the interest of a patentee is served by a controversy, however it may terminate; which, while it draws the attention of many to the subject, is read by few with that care required to form a just conclusion.

I had expected, therefore, from Mr. Perkins, or from some one for him, a defence of his patent; but I confess I expected something better than that contained in your October Number.

He commences by charging me with having made "erroneous statements as far as regards his patent," &c. &c.; and is "induced to endeavour to set your readers right by a simple statement of a few facts, which his experience of the system has enabled him to prove." I have read his paper over carefully, and really am unable to find the statement of a single fact in it, from beginning to end.

His first fact is, that, if I will go to his manufactory, he will convince me that his tubes are now invariably proved to 100 atmospheres, and will stand 300 atmospheres. His second fact is, that, if I will go the Gallery of Practical Science, I may satisfy myself as to the scalding effects of high-pressure steam. These are certainly a novel order of facts. With respect to the first, I am ready to believe the tubes are proved to something; but I remain incredulous as to the amount, for the reasons I have before stated; and because the assertions neither agree with the calculated strength of such tubes, nor with the results of my own observation on them. The tubes of locomotive boilers, which are of hammered copper, about $1\frac{1}{2}$ in. diameter, and one tenth of an inch in thickness, are frequently burst; that is, broken in, by a pressure of only about 80 lb. to the inch. But this is a matter comparatively unimportant: it will not avail Mr. Perkins to show that his tubes are proved to a given pressure, unless he can also show, which he has not done, that his apparatus possesses the means of a determinate regulation as to pressure when at work. It is no guarantee of safety, to prove a tube to 100 atmospheres, which, before it be an hour at work, may be exposed to a pressure of 1000! What use would there be in proving a steam boiler, if there were no means of telling, afterwards, the pressure it was worked at?

With respect to the scalding of high-pressure steam, it is unnecessary to ap-

peal to Mr. Perkins's "*Novum Organon*," the "Gallery of Practical Science," or any such toy-shop. It is perfectly well known, that, under certain circumstances, high-pressure steam will not scald *close to the aperture of escape*; but, under other circumstances, viz. when free access of air is prevented to the aperture laterally, it will scald; and, in all cases, will scald at some distance from it. This is precisely the condition of most of Mr. Perkins's tubes, which are usually cased up in a perforated paneling of wood or iron. But this is not the question. Mr. Perkins need not be told (for, doubtless, he has before this witnessed it), that if his tubes, or a tubular boiler, burst, *the water is blown out, along with the steam, to the last drop*; and, therefore, if projected against any individual, the boiling water will do its work, if the steam do not. We may gather this from Mr. Perkins's own words; for he informs us that "it is impossible to separate steam from water in such small tubes;" and he says truly, provided the aperture of escape be large in proportion to them: but if it be but small, they will readily separate. I have myself seen and heard the top screw, in one of his expansion tubes, blowing out, between the threads, high-pressure steam plentifully, without a drop of water.

Mr. Perkins's next sentence is too good not to be quoted entire. He says of me, "His next error is, in supposing that the quantity of heat given out by any heated body increases only in an arithmetical ratio; whereas it increases in a geometrical ratio; he will, therefore, be surprised to find that a pipe, 1 in. in diameter, heated to a given degree, will give off as much heat as a pipe of 4 in. in diameter, heated to only half the temperature." Truly, in the records of ignorance and absurdity, this sentence is not to be matched. Its first clause, the uninitiated might mistake to mean, that the more a body cooled the hotter it got: it shows, however, how unused Mr. Perkins is to dealing with such intractable things as ratios, and so forth.

If I have rightly divined what Mr. Perkins means to convey by the sentence I have quoted, it is this: that the ratio of the heating powers of bodies is directly as their surface, and as the square of their temperatures; for example, that if there be two equal bodies, with temperatures, as 1 to 2, their heating powers will be as 1 to 4. This is a discovery, truly; and if this be, as I suppose, Mr. Perkins's datum of hot-water calculation, it gives a ready solution of the cause of the deficiency of heat complained of in so many of his "systems." How Mr. Perkins has arrived at such an idea as the above, is almost incomprehensible, but would seem to be from some strange confusion between the laws of cooling of different bodies, and the rate of cooling of the same body. It really is a pity, before he committed himself thus publicly, that he did not show his production to some friend who had a little elementary knowledge of the subject; for it now becomes necessary to set him right in order to prevent the chance of any reader of this Magazine being deluded by his preposterous misstatements.

It may first be necessary to inform Mr. Perkins, that the heating powers of different bodies (stated in all its generality) are not in the ratio of their temperatures at all; but, *other things being the same, in the ratio of the differences between their temperatures and that of the medium in which they cool*; and their heating powers are stated, in my former paper, to be in the ratio of their temperatures, simply, because it is usual, in making calculations of heating apparatus, to consider the thermometer at 0°; and, therefore, in that particular case, and in no other, the differences of their temperatures, and that of the cooling medium, are identical with the temperatures themselves. For this Mr. Perkins may consult *Tredgold on Warming*, p. 58. et passim.

Now, an exact expression for the law of cooling, in free air, of a heated body, is a much more difficult and complex thing to be ascertained than, probably, Mr. Perkins could be brought readily to apprehend; as he may find by looking at Dulong and Petit's researches on the subject, in the *Annales de Chimie*, or in vol. xiii. of the *Annals of Phil.*, or at the article "Heat," in the *Encyclopædia Metropolitana*; but, for our present purpose, three acknowledged approximate laws are sufficient:—

1. *The heat given off by similar heated bodies is, cæteris paribus, directly as the excess of their temperatures above that of the medium in which they cool: and of the heat lost, about one half is lost by radiation, and the remainder by atmospheric conduction. It is obvious, as before said, that when the temperature of the medium is $= 0^{\circ}$, the heat given off is simply as the temperatures of the bodies.*

2. *Other circumstances being equal, the heat given off by heated bodies to the surrounding medium is directly as their surfaces.*

Hence, uniting both laws, we may get a very simple expression for the analogies they suggest. Let τ be the temperature of any heated body; t that of the medium at which it cools; s its surface; and e its effect, or heating power; and let the same letters, accented, denote the same in any other body of similar form and kind of surface. Then

$$1. \quad s(\tau - t) : e :: s'(\tau' - t') : e' = \frac{e s'(\tau' - t')}{s(\tau - t)}$$

and if t and t' be $= 0$ then

$$2. \quad s\tau : e :: s'\tau' : e' = \frac{e s' \tau'}{s \tau}$$

and to obtain a general expansion from different kinds of surfaces, Tredgold has given certain coefficients, deduced from experiment. Hence we perceive, that in two similar bodies, with like surfaces, cooling in a medium at zero, if their temperatures be equal, their heating powers will be directly as their surfaces; and if their surfaces be equal, their heating powers will be directly as their surfaces; so that, adopting Mr. Perkins's own example, "he will be surprised to find," that a pipe of 1 in. in diameter, and of a given temperature, will just give out one fourth as much heat as a pipe of 4 in. diameter, and of the same temperature, their lengths and positions, &c., being the same. Thus, then, my original statement is proved to be correct, and Mr. Perkins's amendment to be a gross blunder.

The laws above given are merely approximations, but sufficiently close for the present purpose. I have already mentioned that an exact general expression for the loss of heat in elastic media, embracing all conditions, has not yet been obtained, to my knowledge: those who desire further information upon the subject, which, it may be remarked, is one of great interest, may consult the works already alluded to, and also Professor Powell's admirable *Report on Radiant Caloric*, for the British Association, and Fourier's elaborate analytic work *On Heat*.

The third law of cooling I shall mention, not as relating to the subject in hand, but merely because I think it affords a clew to Mr. Perkins's blunders, is that, *The same body, in cooling down from any given temperature, loses, in equal portions of time, quantities of heat which form a descending geometric series.* This law, originally proposed, *a priori*, by Newton, is incorrect; but is nearly true for low temperatures.

Mr. Perkins next proceeds to notice my statements respecting his "rolled gas tubing," which, he asserts, is not *rolled*, but *drawn*; and he seems to lay great stress on this. I believe, from the description of those who have seen the manufacture, that those tubes are made nearly as follows:—A slip of boiler plate is hollowed nearly to a semicylinder in a proper swage; one end of it is hammered quite round to a cone; a mandrel is slipped through it, and the whole is drawn through a draw-plate, which laps the plate pretty evenly round the mandrel. The so-formed tube is now heated to a welding temperature, and passed through a pair of fluted rollers; by which operation it is welded, and first becomes a perfect tube: it is, possibly, again passed through a draw-plate, to give it the appearance of being drawn. Thus it is obvious that, though it is nominally *drawn* tubing, yet the welding is due merely to pressing the edges of the plate together between rollers.

Suppose, however, the tubes to be *drawn*, and suppose them proved to 1000 lb. to the inch, all this will not render them a whit safer; while it is

utterly uncertain to what increased pressure they may be exposed when in use.

The rest of the paragraph is a good specimen of the style of Mr. Perkins's logic. He says, the tubes are not gas tubing, for they are made purposely for the work, and *because*, when burst, they are not used; he says he does not keep the large expansion tubes in the background, for, "although not so strong as the small tubes, they are sufficiently so, and are always proved." He then makes what, doubtless, he fancies a "clencher," by saying that "I render my own question a useless one, as to how he knows the amount of pressure to which the tubes are subjected;" as I say, "it is only a mode of heating by high-pressure steam, care being taken that the coil in the fire shall not be able to burst the pipes." Most true, provided Mr. Perkins admits the premises, as I suppose, by his words he does: so, then, it is acknowledged, that the pressure on the "hermetically sealed system," is studiously preserved next to nothing. High-pressure boilers are commonly considered not free from danger; but it is quite certain you may keep a candle under one, for any length of time, with absolute safety.

It is tiresome to follow Mr. Perkins thus step by step: his next observations, as to sediment, &c., show that he is as ignorant of the nature of such deposits, as he appears to be of the laws of heat.

He attempts to show that there can be no sediment deposited in his tubes; because, if they leak, it is a leakage of hot water only (he had before said, "it was impossible to separate steam from water in such small tubes), and all it holds in solution. But it happens, that a sediment is just the very thing the water *does* not hold in solution.

The formation of a sediment, in almost every case, is not produced by evaporation at all, but simply by heating the water; by which the various matters contained in common spring and river waters, &c. (chiefly carbonates, sulphates, and muriate of lime, iron, and magnesia), are converted into insoluble basic salts, which precipitate and adhere to the sides of the vessel: so that *a sediment may take place without the loss or evaporation of one drop of water.*

Mr. Perkins appeals to an attempt to use a saturated solution of common salt in his tubes, in confirmation of his view; which, unluckily, is the only case to which it does not apply; inasmuch as the precipitation of salt from a saline solution, as in a marine steam-boiler, is not, properly, a sediment at all, but simply a crystallisation produced by evaporation. I would ask, *en passant*, if the saline solution was found so tractable, why was it abandoned, for it would make a special addition of temperature to Mr. Perkins's tubes; but it probably would not agree with a defective joint, or joints, as the case might be.

Mr. Perkins next touches upon my observations on the great resistance to the circulation of the fluid, caused by the vast number of twists and bends in his tubes, and by their very reduced size, and great length; and "assures me that it is so small, that he knows not an instrument sufficiently delicate to measure the difference of the resistance when the pipes have bends in them, and when they have not." He further admits, that "the water probably never circulates faster than *ten feet per minute*." Nothing is more likely than that Mr. Perkins does not know how to estimate the resistance due to bends and friction in pipes; but, nevertheless, this will not alter the fact, that in his tubes the resistance is immense, as compared with the force-producing motion.

This is not the place to enter upon the extensive and complex subject of the resistances of fluids in hot-water circulating apparatus; but two or three lines will suffice to show whether they are as imperceptible as Mr. Perkins would have believed. And, first, as to the increase of resistance, due merely to diminution of section in the small tubes. I have taken the following results from the valuable tables of Smeaton, first published in the article Hydrodynamics, vol. xi, p. 539., of *Brewster's Encyclopædia*, in which the bore of various pipes is given, each 100 ft. in length, the velocity of motion per second, and the head of water running to produce that velocity, or to overcome the resistance from friction.

Velocity of water per second.		Bore of pipe, 1 inch.		Bore of pipe, 2 inches.		Bore of pipe, 4 inches.		Remarks.
ft.	in.	ft.	in.	ft.	in.	ft.	in.	
0	2	0	0·4	0	0·2	0	0·9	The rate Mr. Perkins says the water in his tubes circulates at.
0	6	0	2·2	0	1·1	0	0·6	
1	0	0	8·4	0	4·2	0	2·1	
2	0	2	4·9	1	2·4	0	7·2	
4	0	8	11·0	4	5·5	2	2·7	
5	0	14	0·0	7	0·0	3	6·0	

Hence it is shown, that, at the same rate of circulation, the resistance due merely to the difference of diameter is *four times as great in Mr. Perkins's 1-in. tubes as in the ordinary open apparatus with tubes of 4 in. diameter.*

Now, as to the effect of bends and turns. Tredgold (*On the Steam Engine*, p. 96.) shows that *one tenth* of the velocity may be considered as lost for each right-angle bend; and one fiftieth for each curved bend, or obtuse angle.

Mr. George Rennie (*Phil. Trans.*, June, 1831) found, 1st., that, in a $\frac{1}{2}$ -in. pipe, 15 ft. long, with one semicircular and two quarter-circle bends, as compared with a straight pipe of equal length and bore, the resistance varied from one 36th to one 76th part of the resistance of the straight pipe. 2dly, That within fourteen semicircular and two quarter-circle bends, the resistance varies from one 19th to one 39th of the resistance of the straight pipe.

Further, M. Venturi has shown, that, in three tubes of equal length and diameter, but one of them straight, another bent to a wide-curved sweep, and a third at a right angle, the expenditures, under the same head are as follows:—

Straight tube	-	-	- 45
Curved tube	-	-	- 50
Right-angled tube	-	-	- 70

The tubes by which his experiments were made were 43 in. diameter, about the size of Mr. Perkins's. But enough of this: to anticipate objections, I must state that all the above are but approximation, though they are quite close enough for a practical judgment in the matter.

Now, many of these "hermetical systems" have from 50 to 100 bends, twists, and turns at right angles, in them; including many places in which one tube is inserted sidewise into another; and let the reader judge if the circulation be carried on in any way, but merely by the constant ebullition of the high-pressure steam and water within the tubes. The next observations relate to the decomposition of the water within the tubes; and here it is, to say the least, observable, that Mr. Perkins has passed over in silence my remarks upon its *slow decomposition being extremely probable in all cases* with his apparatus. Of the rest, "that when the water is so reduced that it cannot circulate, it is driven out of the coil by the repellent power of the heat," and so forth, it is a sufficient reply to say, it is rank nonsense! The water is unable to circulate in a tubular high-pressure boiler; but I never heard of its being found at the *top of the boiler*, and the fire at the bottom: "under such circumstances," the coil would most assuredly be destroyed, but it would be by bursting.

One observation more, and I have done with Mr. Perkins, and "his system." He says, "With respect to uniformity of heat," "nothing is easier;" "it is done by the manner in which the furnace is constructed;" and so on. Now, here is a full admission of the point I contended for in my former paper; namely, that these small tubes are, "*ab initio*," a contradiction to the great and almost solitary recommendation of the hot-water system: that is to say, uniformity of communicating heat. Here Mr. Perkins candidly admits that he cannot maintain any uniformity of heat with his hot-water apparatus; and that he is compelled to attempt to do so by the structure of his furnace. How much better, then, I ask, is his whole piece of complexity than a common steam-heating apparatus: for, if a furnace can be made to give uniformity of heating power to one, it will as well give it to the other: but my humble opinion of Mr. Perkins's furnace is, that it is incapable of keeping up a uniform heat

for two hours, much less twelve, and that it is a very clumsily contrived affair altogether.

I have now done with the subject, of which I am heartily tired. I think I have shown that Mr. Perkins knows extremely little about "the principle upon which his system is founded," and that he has truly "reason to regret that he should have reasoned upon hypothetic," or rather upon chimerical, data.

In now taking leave of the subject (for I hope never to have to put pen to paper about it again), I would wish Mr. Perkins to believe that whatever, if any, harsh or grating expressions be found in the foregoing pages, they are intended for his views, and his method of supporting them, and not for himself personally.

P.S. Since writing the foregoing, I perceive, in your February Number (Vol. II. p. 96.), an account of an accident to the "Hermetic System," from a cause which I entirely overlooked in my catalogue of its sins; namely, from heating the tubes when they were all frozen. Now, it is observable, that these tubes, from their small size are more liable to be frozen, even in not very hard weather, than any other kind of hot-water apparatus; and the consequences more dangerous by far, and the damage more costly to repair. It appears to me, that, should a "hermetic system" freeze throughout its whole length, it would be impossible to thaw it by fire heat without bursting it; for none of the ice will melt until it *all* gets above 32°; and before that at the end remote from the fire arrived at that temperature, owing to the small section for conduction, the coil would have burst.

According to Mr. Perkins's theory in the case alluded to, instead of bursting, the water should have been "*repelled*" by the heat of the coil, and kept aloof from the fire, until the coil melted; but, nevertheless, it was the expansion tube which burst. — *Censor. November, 1835.*

Alleged Ignorance of Architects, &c., by Scrutator. (Vol. II. p. 402. 469. 558.)—Candidus appears, in your last Number (Vol. II. p. 558.), very anxious that I should notice his remarks (Vol. II. p. 469.) on one of my communications (Vol. II. p. 402.), wherein I observed that one of the causes of abuse in building "is owing to the ignorance of the architect, arising from his not having had a practical education. I further observed that "there is not one architect in five that properly understands his profession, and, for the want of this practical education, they can only be called artists." Candidus is pleased to say that these words "do appear to advance a most extraordinary kind of doctrine." Now, it does appear to me, from his superficial and bandbox remarks, that Candidus is just the sort of person that I should call an *artist*. Can it be believed, that an architect would be so bold as to advance the extraordinary assertion that he has made; viz. "that the practical part of the professional qualities of an architect might be divided from the art of design." What would be said, if I were to advance the doctrine, that the qualifications a medical man might be divided; that some should only study the physiology and anatomy of the human frame, and others only the efficacy of medicine? I should be told I was a madman to advance such nonsense; for that no man could practise either physic or surgery with success, who was not conversant with both studies: and yet this is a doctrine not a whit more extraordinary than that of Candidus. I would recommend him to pause, and study some of the works of the ancient writers on architecture, and hear what they have to say as to the qualifications of an architect. For his edification, I will give a short abstract from the first chapter of the first book of Vitruvius, wherein he says "that practice and theory are the parents of architecture. Practice is the frequent and continued contemplation of the mode of executing any given work; or of the mere operation of the hands, for the conversion of the material in the best and readiest way. Theory is the result of that reasoning which demonstrates and explains that the material wrought has been so converted as to answer the end proposed. Wherefore the mere practical architect is not able to assign sufficient reasons for the forms he adopts; and the theoretic architect also fails, grasping the

shadow instead of the substance. He who is theoretic as well as practical is, therefore, doubly armed; able, not only to prove the propriety of his design, but equally so to carry it into execution. In architecture, as in other arts, two considerations must be constantly kept in view; namely, the intention and the matter used to express that intention: but the intention is founded on a conviction that the matter wrought will fully suit the purpose; he, therefore, who is not familiar with both branches of the art has no pretensions to the title of architect."—*Scrutator.* Dec. 1835.

ART. III. Queries and Answers.

THE Elements of Grecian and Roman Architecture. (Vol. I. p. 108. 153. 259.) — In reading over the article by Mr. Robertson, entitled "The Elements of Grecian and Roman Architecture, practically explained to the General Reader," I find, at p. 260., that "the characteristic features" (of the Grecian Ionic order) "are the volutes of the capital, which are placed flat on the column, and the enriched ovolo which connects them;" and again, p. 263., that "the Roman Ionic is distinguished by the volutes, or scrolls, of the capital; and, in this particular, differs essentially from the Grecian Ionic. In the latter, the volutes are placed flat on the shaft, as before observed, and are seen in front and in the rear, each side having the appearance of a baluster; but the Roman Ionic capital has the volutes placed diagonally, or on the angles, with the abacus hollowed out on the four sides; and, consequently, presenting the same appearance at the sides as at the front and rear." Now, on reference to Nicholson's *Principles of Architecture*, 3d edition, 1827, pl. 176., headed "Roman Architecture, from the Temple of Fortuna Virilis at Rome," I find the capital shown having only one (not two) of the volutes placed diagonally, or on the angle, and the abacus is quite square (not hollowed out): again, pl. 179., "Roman Architecture, from the Theatre of Marcellus at Rome," the volutes are placed flat on the shaft; and again, pl. 186., "Roman Architecture, from the Coliseum at Rome," the capital has its volutes placed flat on the shaft, and its abacus square, and not hollowed. Here Nicholson appears opposed to Mr. Robertson; and I should be extremely obliged to Mr. Robertson, or any of your correspondents, who will clear up the seeming contradiction which appears to exist. Having to do with capitals (to columns) at times, and being in this matter, I own, ignorant, the information will be very valuable to — *A Practical Carpenter.* Hertfordshire, Oct. 10. 1835.

ART. IV. Obituary.

DIED, on the 29th August, 1835, at his residence in Castle Green, Bristol, *George Dymond*, architect, aged 38. The disease was an affection of the spine, which occasioned him to suffer acutely: still he endured it with great Christian patience and resignation. He always manifested a zealous attention to the duties of his profession; and, indeed, it may be said, that the exertion he used, even at the time when he was labouring under great bodily suffering, may have been the means, in some degree, of hastening his departure. His memory will long be cherished by all who knew him; each of whom must regret the loss of one who was, in every respect, an upright and conscientious individual. No man was ever more attached to the pursuit in which he had embarked; he was one of those who threw aside the trammels of the ancient prejudices of the art, and in all his designs displayed a mind determined to obtain the requisite effects of beauty, without sacrificing to it matters of so much consequence as unity, fitness, and convenience. — *E. B. Bristol*, Nov. 14. 1835.

Died, on the 22d of August, at Norwich, *Francis Stone*, of that city, architect; for upwards of thirty years county surveyor of Norfolk.

THE ARCHITECTURAL MAGAZINE.

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ORIGINAL COMMUNICATIONS.

ART. I. *On combining Utility with Beauty in Architecture, and preserving Consistency in the Decorations.* By CANDIDUS.

WERE utility the paramount principle in architecture, it ought to follow that we should be most forcibly impressed by it when it presented itself directly and undisguisedly. A mere post would have quite as strong a claim to our admiration as the most elegant column; and the naked square pillars in the front of Drury Lane Theatre would satisfy the eye no less than those introduced in the east portico of St. George's Hospital. The truth is, utility will go but a little way indeed towards accounting for the delight we receive from architecture; inasmuch as it is generally least apparent, and, in fact, hardly to be found at all, in those buildings which most forcibly command our admiration. What particular utility, at least in the ordinary meaning of the word, is to be discovered in the stupendous pyramid, in the lofty spire, or in the majestic dome? Even a regard to proportions alone, upon which such stress is usually laid, frequently carries the architect quite out of sight of utility; not that exactness in the proportions is at all prejudicial to what is necessary, but because it does far more than utility demands. Most undoubtedly, beauty, and the embellishment which contributes to it, ought invariably to originate, however remotely, in some principle of utility; and, certainly, never to be in opposition to it. Adscitious ornaments there may and must be; yet these should be as the hues of the plumage, that delight the eye, although they in nowise accelerate the swiftness of the pinion they adorn. Let the style be what it may, this is a fundamental principle; not, indeed, always kept in view, yet not to be disregarded with impunity. As, in Grecian architecture, the roof and internal ceiling, doors and doorcases, were, similarly to columns, made to contribute to the ornamental character of the whole structure; so, in the Gothic, doorways and windows, gables and chimneys, buttresses and parapets, were all rendered subservient to the same purpose:

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thus was beauty not merely added to, but incorporated with, utility. Both were equally obvious; yet it was their being combined that gave them an artistical value: which value, be it observed, is mainly attributable to the former quality; since, apart from that, the other would excite no emotion beyond simple approbation.

Of Grecian architecture we have scarcely any examples save temples; and these were so much alike, so simple in their plan, and had so very few features except those we have just alluded to, that they offer no express studies for numberless other things the modern architect has occasion for. It can, nevertheless, hardly be questioned, that the Greek artists would have embellished, appropriately with all the rest, whatever they might have been obliged to introduce. Had they had chimneys, these would, no doubt, have been decorated no less elegantly than their *antefixa*, or eaves tiles; had they been acquainted with the use of glazed windows, these, again, would, in all probability, have assumed as much importance, and displayed as much inventive taste, as those of the Gothic style do. Instead, however, of studying how we might best supply, for ourselves, all those things for which we meet with no prototype, or authority, in ancient architecture, we moderns have directed our attention too much to the orders; too much, because too exclusively. With all our study, too, of this kind, we have, for the most part, quite overlooked the spirit even of the orders themselves. It would be easy to point out buildings with Doric, Ionic, or Corinthian columns, as may be, which yet do not partake, even in the slightest degree, of these respective styles. In many Italian buildings, what is, by courtesy, termed the order, is the least distinctive feature; while, in many of our own, the columns and their entablature present only a ridiculous contrast to the rest of the structure. Architects, in sooth, seem to be rather a superstitious race, putting their faith in columns as certain charms against all defects and enormities. After overloading our buildings with uncouth vagaries, and antic distortions, in stone, as if ambitious of exhibiting all the grimaces of which art is capable, we next struck into a path directly opposite to this, yet as remote as before from correct taste. Calling nakedness simplicity, and meanness economy, we stripped away every thing but columns and pilasters; a system which both simplicity and economy must equally condemn. If we understand the former term at all, it implies, indeed, a certain sobriety of embellishment; but, more than all, that perfect agreement of every part, which convinces the beholder that one predominating principle regulates the whole. What simplicity, then, can there be in a structure exhibiting, at the same time, such dissimilar characters as those of a plain sash-windowed house,

and a Grecian temple? Of such absurd contradictions there are but too many grossly offensive examples here at home; but we prefer instancing that of the Post-Office at Dublin, which has a hexastyle Ionic portico, with fluted columns and an enriched frieze, attached to a plain front of three stories. How such things can be reconciled with any notion of economy is to us perfectly inexplicable; since all the extraneous embellishment is quite thrown away; while the nakedness of the other parts, excusable only where economy is consistently adhered to, becomes, when contrasted with the ornamented part, a positive and most disgraceful defect.

Architects who have given into this vice, for such we cannot help considering it to be, seem to think that, by bestowing greater finish on the order so introduced, they redeem the poverty of the rest; while, in reality, they only render it more intolerable. The greater the pretension exhibited in one respect, the more does it require to be kept up consistently throughout; and such a mixture of poverty and finery is like a fine head-dress, decorated with jewels and feathers, and worn with a *toilette de nuit*. Windows, without architraves or mouldings of some sort, are but mere unfinished apertures in a wall, without the least regard to architectural beauty; consequently, to employ such features along with finished columns, is no less a violation of decorum than to omit the capitals and bases of the columns themselves. Our advice to the architect would be: If you cannot be consistent in decoration, at least be consistent in the omission of it, and do not seem even to aim at what you can only imperfectly accomplish. If circumstances prevent your producing a finished picture, do not work up parts here and there, while others are merely sketched in: in a word, attend to *keeping*.

Architects are apt to drag in columns too decidedly; frequently, it should seem, with no other view than to save themselves the trouble of all farther thought; relying, exclusively, upon them, for that degree of character and effect they know not how else to obtain. Instead of studying how to make every other part accord with these in expression, so that the style should still be perfectly recognisable were the columns removed, they get over the difficulty altogether (and a difficulty it is of no small magnitude) merely by evading it. Columns, and the other parts of an order, are, with us, nearly altogether matters of mere routine; certainly far more so than is either desirable or necessary; consequently, they exhibit nothing of the architect's own, beyond the taste shown in the selection. Of his actual ability, of his inventive talent, we can judge only by the entire composition, and by such ideas in it as are unborrowed. The veriest bungler can hardly fail of producing some

sort of effect by means of columns. The question, then, is, not whether there is any tolerable effect at all, but whether the utmost is made of it. Whether, instead of any portion of it being lowered, or destroyed, by other circumstances, every thing else tends to heighten, and to impart an additional value to, those features. Unless he can accomplish this, or, at least, preserve some tolerable consistency throughout, the architect (artist we cannot term him) only displays his own imbecility, his utter want of feeling, and sterility of conception. While such plodding drudges degrade, by tasteless misapplication, the beautiful forms they borrow, the man of genius knows how to ennoble what he finds mean, and to elicit hitherto undiscovered beauties in what he borrows from the common stock of his art. With him an architectural composition is a picture, wherein nothing, however subordinate it may be in itself, will be carelessly passed over; but in which every thing will be studied with reference to the whole.

ART. II. *On Artisans.* From the French of QUATREMÈRE DE QUINCY.
By P.

ARTISAN is a name given to one who professes a mechanical art. "Nothing can, apparently, be more absurd," says Marmontel, "than ennobling the ornamental arts to the exclusion of those of actual necessity; or making a distinction, in the same art, between the agreeable and the useful, to honour the one in preference to the other; and yet, nevertheless, nothing is more reasonable than these distinctions, when we regard them closely. The principal object of a reward is to encourage labour. So, those labours which only require common faculties, such as bodily strength, a skilful hand, quickness of perception, and a degree of industry which is easily acquired by exercise and habit, demand no higher an excitement than that of a good salary to call them forth. Robust, laborious, active, and skilful craftsmen, are every where to be found, who are perfectly contented to work for their maintenance, and whose desires extend no farther than to be able to live in comfort by their labour. In the exercise of the mechanical arts, even those which are the most useful and necessary, nothing more than the perspective of an easy and comfortable life can be presented; and the natural qualities which are essential to an artisan are not such as are likely to render their possessor more ambitious. The mind of an artisan, or a labourer, feeds not on chimeras; and fame, which exists but in the opinion of the world, can have, for him, only a feeble interest."

However true these reflections may be in the present state of

society, we must confess that the low state of estimation in which the mechanical arts are now held depends more upon those who practise them, than on any qualities inherent in the arts themselves. It is true, also, that a great difference of opinion exists as to the degree of knowledge required in those who practise the mechanical arts; and that, while some persons maintain that an artisan should confine himself to practising his craft in the manner others have done before him, without thinking of the theory of the art, or daring to strike out a plan for himself, it will be in vain to hope for much improvement. Artisans are, generally speaking, too dependent on their employers, to act otherwise than as they think most likely to please; and thus, by depressing themselves, they contribute to lower the standard by which they are judged. The reverse ought to be the case: if every man contrived to raise himself a little above the usual standard, his profession would rise with him, and would soon be held in a much higher degree of estimation. Every man, in short, when he deserves to be respected, communicates to his profession a degree of consequence which cannot fail, in the end, to be advantageous to himself. The artisans of Rome were citizens, and voted in the *comitia*; and the Greeks appear to have made still fewer distinctions than the Romans, between the liberal and the mechanical arts, and between artists and artisans. In Greece, every artisan who excelled in his calling could look forward to his name being immortalised, as well as that of the most distinguished artist. We have handed down to us the name of Architeles, a famous stone-cutter, who distinguished himself in the art of hewing out columns: and in the Isle of Naxos statues were erected to Bizas, who first formed the Pentelicus marble tiles to cover buildings. The names of several other artisans, of different kinds, have also reached us; and many works, and modes of working, now practised, have taken their names from that of the workman who invented or perfected them.

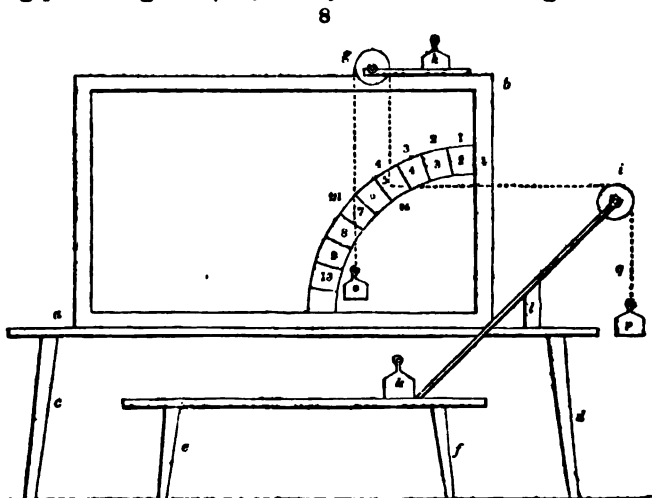
ART. III. *Experimental Essays on the Principles of Construction in Arches, Piers, Buttresses, &c.* By WILLIAM BLAND, Esq., Jun. Essay 1. *Arches.*

THE Principles of Arches. — Being fond of architecture, particularly that branch of it which relates to bridges and cathedrals, I have been induced to investigate the principles by which such stupendous, beautiful, and lasting fabrics were, and still are, constructed. I have examined the pages of Hutton, Atwood, Ware, the Encyclopædias, and others, on my favourite subject; but, failing in my object, after a careful perusal of them, I was neces-

sitated to investigate for myself. I have done so, and this and the following essays contain the result of my enquiries, which I humbly and respectfully lay before the public, in order that it may judge of their accuracy; and, also, to afford an interest to those persons who are of a corresponding taste with myself.

My first step was to cut out a quantity of wooden bricks for voussoirs, or arch stones, 4 in. long, $2\frac{1}{2}$ in. deep, and 2 in. thick, sufficient in number to construct two semicircular arches; one of 10 in. span, the other of 24 in. Besides these, I cut out about 300 wooden bricks, 4 in. long, 2 in. wide, and 1 in. thick. With these materials, and without cement, I was enabled to erect arches of various forms and dimensions; but, still, a knowledge of the true principles on which they should be constructed continued to elude me, and to remain unknown. I, however, discovered that all arches, of whatever form they might be, were subject to the laws of two distinct forces; namely, one acting perpendicularly downwards, and the other horizontally outwards. This being the case, I determined to ascertain, as accurately as I could, by means of weights, the exact proportion in which these two forces acted upon every voussoir throughout an entire semicircular arch, and for this purpose I had recourse to the following plan.

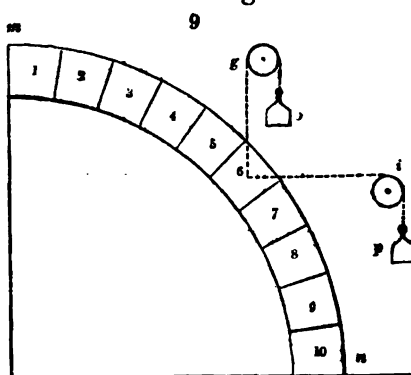
I constructed a frame, as represented by *fig. 8.*, the form of an oblong parallelogram (*a b*), and placed it on the edge of a table



(*c d*), under which was a stool (*e f*). Two movable pulleys were attached to the frame; one at the top at *g*, which was kept in its place by the weight *h*; and the other (*i*) resting on one end of the stool, and having a weight (*k*) to prevent it from slipping; with the support *l*, at *d*, to raise or depress it at pleasure. A

proportion of an arch of the semicircular form, to be experimented upon, is represented at $m n$, and consists of ten voussoirs; the fourth of which (n) is in the act of trial, and has the perpendicular force of the voussoirs 1, 2, 3, balanced by the weight o , which is attached to the line $m g n$, running over the pulley g ; and the horizontal force of the same voussoirs is balanced by the weight p , attached to the line $g i n$, running over the pulley i . The fourth voussoir itself is considered as having no weight in these trials, because it just counteracts the weight of the scales and lines.

With this apparatus I succeeded in the measurement of the perpendicular and horizontal forces; in consequence of which I put the voussoirs to every kind of test, and found that a corresponding law takes place throughout, relative to these two forces, which led me easily to construct a curve above that of the semicircular curve, commonly called the extrados, to represent the lateral or horizontal forces proportional to each respective voussoir, throughout the whole of the arch of the semicircular form. The perpendicular forces, being resisted by the foundation on which every arch must stand, need not be taken into consideration in the construction of the curve; but these perpendicular forces, which are proportional to each and every voussoir, can be represented better in a diagram without a curve; by which means the diagonal lines can be drawn to exhibit the proportions of the compound of the two forces, the perpendicular and horizontal, on every part of the semicircular arch. The following are the results of my experiments:—



Experiment First, made with only half of the arch, consisting of ten voussoirs. Let $m n$ (fig. 9.) be the half of the arch, and constructed of ten voussoirs, from 1 to 10; and g , the perpendicular pulley, with the string and weight o ; i , the horizontal pulley, with the string and weight p : the following are the results, beginning with No. 1., and descending to No. 10., taking away each

voussoir after ascertaining the two forces.

No. 1. has a perpendicular pressure of $\frac{1}{4}$ of a lb., and a horizontal pressure of $\frac{3}{4}$ of a pound.

No. 2. has a perpendicular pressure of $\frac{1}{8}$ of a lb., and a horizontal weight, or pressure, of $\frac{1}{4}$ of a lb.

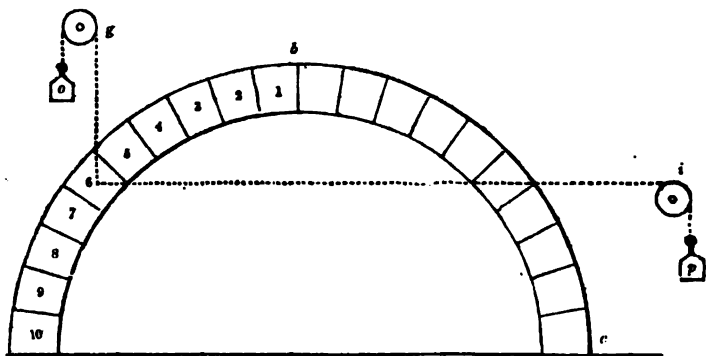
No. 3. has no perpendicular pressure, but $\frac{1}{2}$ of a lb. of horizontal weight.

No. 4. has no perpendicular pressure, but $\frac{1}{2}$ of a lb. of horizontal weight.

No. 5. has no perpendicular pressure, but is sustained by a horizontal force of $\frac{1}{2}$ of a lb.

Experiment Second, made with the whole semicircular arch, consisting of twenty voussoirs. Let $a b c$ (fig. 10.) be the arch;

10



g and o , the pulley and weight to measure the perpendicular force; and $i p$, the pulley and weight to measure the horizontal force. In this experiment the voussoir No. 1. was placed against the part of the arch $b c$, as represented in the diagram, and the two forces then measured; the voussoir No. 2. against No. 1. and $b c$; and so on to No. 10. The results are as follows:—

No. 1. has a perpendicular weight of $\frac{1}{2}$ of a lb., and a horizontal force of $1\frac{1}{2}$ lb.

No. 2. has a perpendicular weight of $\frac{2}{3}$ of a lb., and a horizontal force of $1\frac{1}{2}$ lb.

No. 3. has a perpendicular weight of 1 lb., and a horizontal force of $1\frac{1}{2}$ lb.

No. 4. has a perpendicular weight of $1\frac{1}{3}$ lb., and a horizontal force of $1\frac{1}{2}$ lb.

No. 5. has a perpendicular weight of $1\frac{2}{3}$ lb., and a horizontal force of $1\frac{1}{2}$ lb.

No. 6. has a perpendicular weight of 2 lb., and a horizontal force of $1\frac{1}{2}$ lb.

No. 7. has a perpendicular weight of $2\frac{1}{3}$ lb., and a horizontal force of $2\frac{1}{2}$ lb.

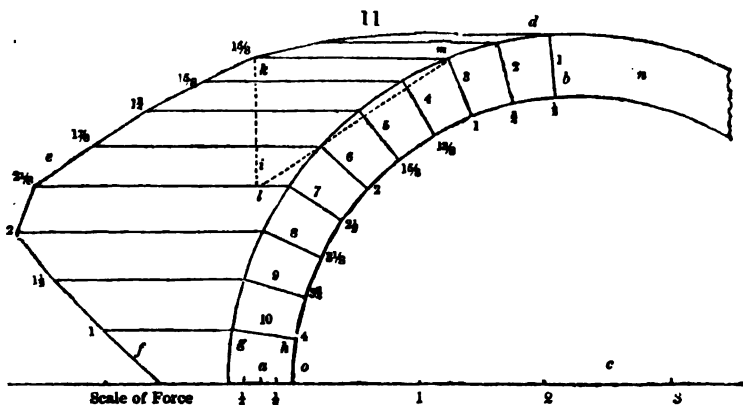
No. 8. has a perpendicular weight of $3\frac{1}{3}$ lb., and a horizontal force of 2 lb.

No. 9. has a perpendicular weight of $3\frac{2}{3}$ lb., and a horizontal force of $1\frac{1}{2}$ lb.

No. 10. has a perpendicular weight of 4 lb., and a horizontal force of 1 lb.

By this scale of proportions belonging to experiment second, it is seen, that the perpendicular weight, or force, increases as the weight is added; but the lateral weight, or horizontal force, increases only as far as the seventh voussoir, and then decreases. From this scale, a curve, called the extrados, may be drawn above a semicircular arch, which will exhibit pretty correctly the proportions of the lateral, or horizontal, force of every voussoir composing the arch. With regard to the perpendicular forces, it may be remarked, that, as they are resisted by the ground, or foundation, it is unnecessary to introduce them here. In fact, if diagonal lines be drawn, equalling the respective perpendicular and horizontal forces of every voussoir, each diagonal line would again be resolved into the above two horizontal and perpendicular forces, of which the one representing the latter would be omitted, in consequence of its having no tendency whatever to press outwards: but more of this hereafter.

In order to illustrate this particular relative to the extrados, let *fig. 11.* be a diagram, in which they are represented by the



lines *d e f*. The figures along those lines show the horizontal forces in pounds, and the figures from *a* to *b* denote the perpendicular forces in pounds. In this diagram, *a b* represents one half of an arch of 24 in. in diameter, and constructed of ten wooden voussoirs upon which the experiments were made. The thickness of the voussoirs, from *g* to *h*, is $2\frac{1}{4}$ in.; and, as each voussoir weighs half a pound, I have taken the thickness of them as my scale for half a pound, which scale is divided into eighths, quarters, halves, and whole pounds. To the adoption of this scale for half a pound I think there can be no possible objection, because, if the voussoirs were of stone instead of wood, or even of iron, this line would represent certain weights within

the extrados. This being the case, the ten parallel and horizontal lines, contained within *d e f*, represent correctly the proportions of the horizontal forces acting on each of the surfaces of the ten voussoirs, numbered from 1. to 10. A line then drawn, passing through the outer extremities of the lines representing the horizontal forces, becomes the extrados to the arch of a semicircle. The figures at the end of each parallel line on the extrados denote the weights, or forces, of equilibrium outwards; and the figures under the intrados are the weights, or forces, of the equilibrium perpendicularly downwards, for each of the ten voussoirs, but the lines are not drawn.

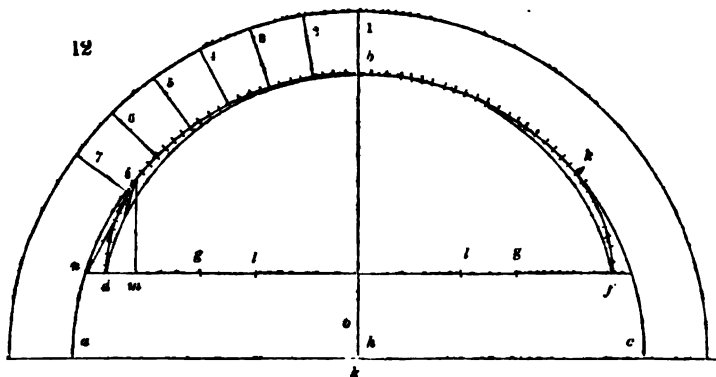
The point *i* is the centre of gravity of the quadrant and extrados, or of the whole body comprehended within the extrados and intrados *o f e d*, which was ascertained by a model; in fact, by a piece of paper cut in the exact form of the diagram. Indeed, supposing the mass to be of a uniform thickness, and of the same specific gravity, a model of wood, stone, metal, or even of paper, will give the same precise result, and this model would just be balanced firmly on the base line, *f o*; consequently, the other half of the arch would be balanced the same; and both halves being placed together to complete the whole arch, either half would be balanced upon a foundation, or pier, of any height.

To prove that the perpendicular lines need not be represented in the diagram, although, to explain the reason, it is necessary to introduce one line, draw through the point *k* the dotted straight line *k l* perpendicular to *k m*, and equal to one pound as taken from the scale, which is the amount of the perpendicular force of the third voussoir, and join *m l*. Now, according to the law of the composition and resolution of forces, *m l* represents the two forces *m k* and *k l*; as also the force at voussoir No. 3., which equals the accumulated forces added to it of Nos. 1. and 2., and the half part of the arch *l n* to the base line, but which is not represented in the diagram. Since *m k* represents and equals the thrust of the arch at No. 3., it may be resolved into the two directions *m k* and *k l*; but the part of the thrust *k l* acts perpendicularly downwards, and, therefore, has no tendency to overthrow the arch. The part of the thrust *m k*, however, acts horizontally outwards, and, consequently, is the only overturning force of the arch at voussoir No. 3.; therefore, the only part of the force *m l* which need be considered: the same may be shown of all the other horizontal lines in the diagram. On a reinspection of the diagram, it will be seen, that the average distance from the extrados to the intrados, measured horizontally, equals half the span of the arch, or *o* to *c*, which is the radius of its circle.

Thus far with regard to the circular curve; and, since arches are constructed of other forms, derived from curves called the

conic sections, &c., such as the ellipse, the parabolic and the hyperbolic, the cycloid and the catenarian forms,

First, of the Elliptic Curve and Arch. — This curve, in its construction, approaches so near to the segments of two circular curves, as may be seen by *fig. 12.*, that the law of the hori-



zontal and perpendicular forces in the circular curve will almost correctly apply to the elliptic form. In the diagram *fig. 12.* *abc* is a semicircular arch, and *dbf* is an ellipse, which is denoted by the dotted line; *gg* are the foci; *h*, the centre of the large circle segment *ik*; and *ll* are the centres of the small circle segments *di* and *fk*.

In consequence of the part of the elliptic curve *ibk* so nearly coinciding with the curve of the circle, as instanced in the diagram, the lateral, or horizontal, and perpendicular forces, considered in an architectural point of view, must be the same very nearly in both. With this being granted, there remains to be considered that part only of the ellipse which is comprehended between *di* and *fk*. Now, in the diagram of the extrados, it is shown, that the greatest lateral force is exerted at the seventh voussoir, or at the points *i* and *k*; consequently, a counteracting buttress must be placed at these points to preserve the structure. In the first experiment with the voussoirs, it is shown, that the four bottom voussoirs have no apparent lateral force, when the voussoirs above them have been removed; therefore, when buttresses are applied at the points *i* and *k*, or the extrados completed to counteract the outward and horizontal forces of the voussoirs above, the lowest four voussoirs on each side of the circular arch perform only the part of piers.

Since piers are for the purpose of supporting perpendicular pressure, the nearer their line approaches to the perpendicular, the more efficient they will become.

In the case before us, from the point *i* draw *im* perpendicular to *df*, and join *id* and *in*. The part *md* of the line *mn* is

No. 6. has a perpendicular weight of $2\frac{1}{2}$ lb.

No. 7. has a perpendicular weight of 3 lb.

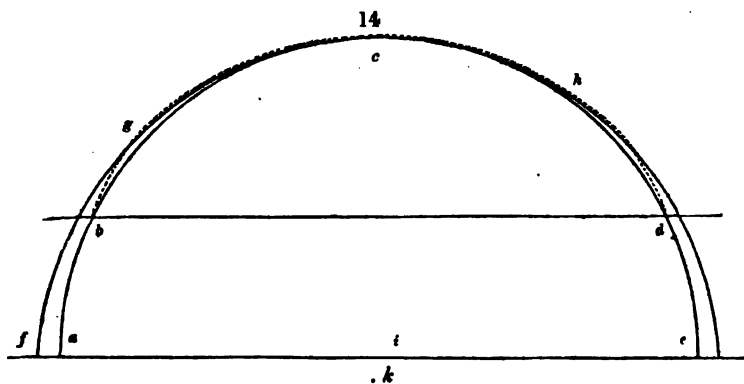
No. 8. has a perpendicular weight of $3\frac{3}{8}$ lb.

No. 9. has a perpendicular weight of $3\frac{7}{8}$ lb.; and the horizontal force of each voussoir, from No. 4. to No. 9., is $1\frac{1}{2}$ lb.

The principal difference between the lateral, or horizontal, forces of the circular and parabolic curves is, that the lateral force of the former increases from No. 1. to No. 7. voussoir, then decreases; but the horizontal force of the latter increases only from No. 1. to No. 3. voussoir, then continues the same to the last voussoir, No. 9. There is this accordance in the two curves, namely, that lateral forces measured on the base line (*a e*), or the average distance from the extrados to the intrados, equal half the span of the arch, which is the radius of the same circle.

Of the Hyperbolic Arch. — The curve of this arch so nearly resembles that of the parabola, as to require similarly formed extrados, having this difference, that the base *h a* (*fig. 13.*) must equal *a l*, having *h g* parallel with the hyperbola as high as *f*. Arches being rarely, if ever, built after the manner of this curve, it will be useless to go any farther into its qualities.

Of the Cycloidal Arch. — In the diagram *fig. 14.* are drawn



three curves. First, the dotted curve, which is the cycloid; second, the semicircular arch (*a b c d e*) passing through the three points *b*, *c*, and *d* of the cycloid, and having its centre at *i*; and the third is also a semicircular arch (*f g i c h*), having its centre at *k*, which coincides with the cycloid almost to the two points *b* and *d*; but near these points the cycloid partakes more of the ellipse, by falling within the circular curve from *g* to *b*. It may be safely inferred, from these circumstances, that an arch constructed of masonry, of the cycloidal form, would require its extrados, from *c* to *g*, to be equal to the extrados of the large semicircle, *f g c h*.

Of the Catenarian Arch. — In consequence of the close similarity between the catenarian curve and the parabolic, there cannot exist a doubt but that, in all structures, the same extrados will effectually answer for both.

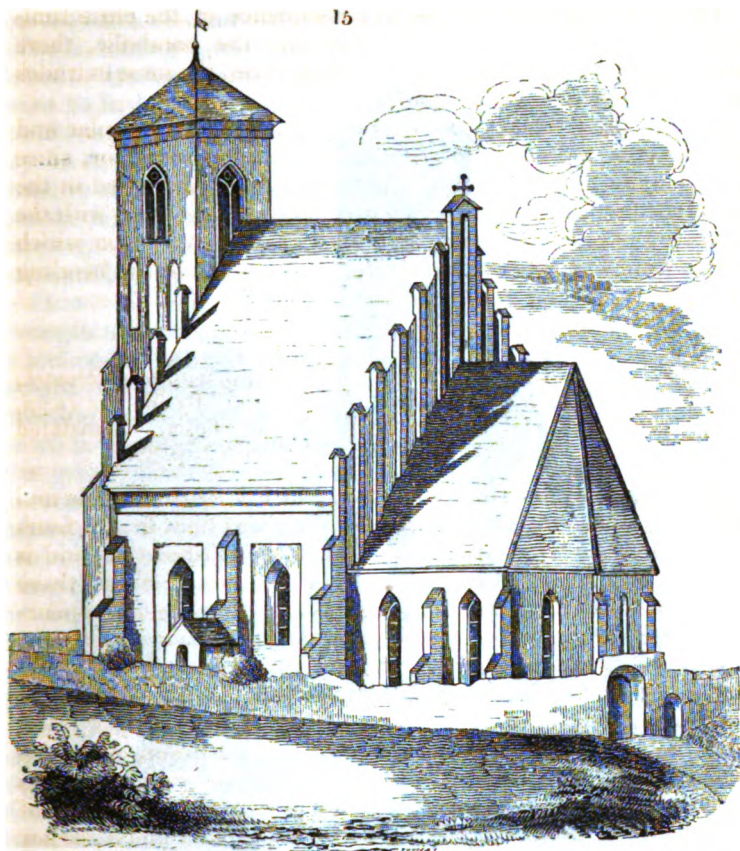
During the consideration of the extrados to the circular and other curves, the effects of friction were not allowed for, since the voussoirs, throughout the experiments, were suspended in the air by the two lines, the perpendicular and the horizontal, with the balancing weights attached to each. The only friction which can be named arose from the axes of the pulleys and the bending of the lines.

ART. IV. *Description of the Church at Kraschen, with some Remarks on the Church Architecture of the Middle Ages.* By M. RIEMANN, Royal Inspector of Buildings at Wohlau in Silesia. Translated from Crelle's *Journal der Baukunst*, bd. 7. hft. 1. p. 89.

THE Catholic church at Kraschen, which is situated a mile and a half (German) from the city of Guhran, was built in the fourteenth century. It is constructed of burnt unpolished tiles, and is distinguished for its pleasing form. In this part of Silesia there are seven Catholic churches, all pretty much alike in appearance, and situated at small distances from each other; viz. at Great Tschirnau, Gleinig, Kraschen, Rabsen, Kantel, &c. According to tradition, they owe their origin to John Duke of Glogau and Sagan, who, in the year 1448, condemned seven lords of his council to be starved to death in a tower, and who built the churches by way of penance for his cruelty. This tradition is, however, incorrect as far as regards the church of Kraschen, the origin of which can be traced to a much earlier period. There is extant an old document, which proves that the church existed in 1376.

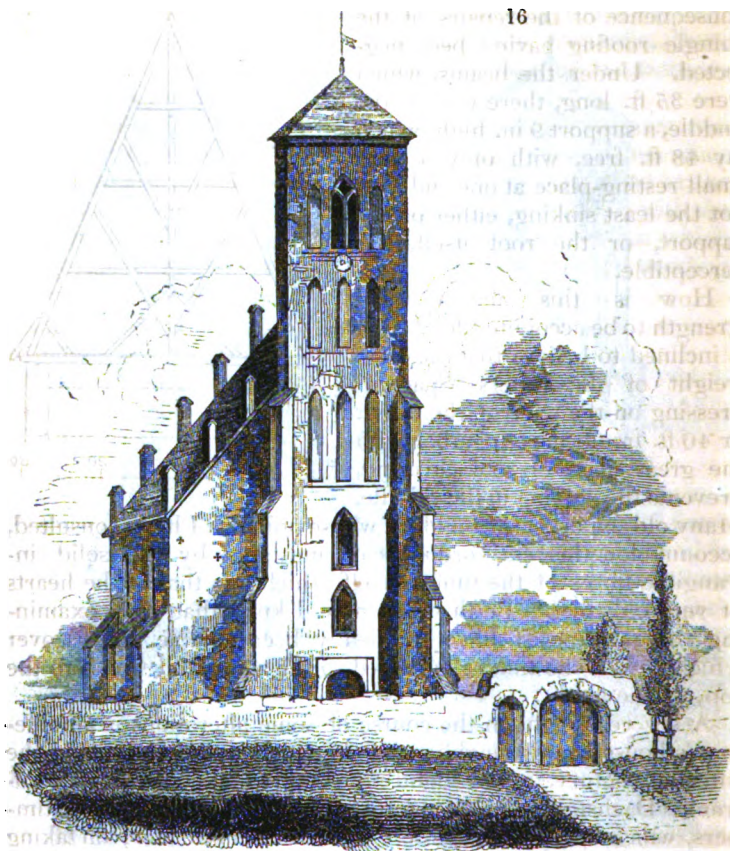
The gables of the high roof of the church at Kraschen, which are ornamented with slender pillars, and which have remained undecayed for upwards of four centuries, increase the ancient appearance of the building; which stands on so elevated a site, that it is visible from a considerable distance in the surrounding country. Two sketches of the external aspect of this church (*figs. 15, 16.*), and *fig. 17.*, which represents the timber framework of the roof (*Dachstuhl*), will help to elucidate this brief description.

Though extremely plain and simple, the church at Kraschen is, nevertheless, very beautiful. It has a tower 110 ft. high, and 18 ft. broad. The slender buttress-like pillars, which ornament the gables, are 2 ft. thick, and are constructed of small-sized common tiles: they are of a hexagonal form, narrowing towards the top, where they terminate in small pediments. The



Gothic ornaments of the windows in the tower are composed of common tiles; and in no part of the building are there any of those elaborate ornaments, formed either of sandstone or terracotta, which are generally considered as peculiar to the architecture of the middle ages.

The lofty roof, the height of which far exceeds the limits of proportion, is supported by rafters 48 ft. long. Roofs of this description are usually considered as characteristic of the architecture of the middle ages; though the reason of their being of so very high a pitch has never been satisfactorily explained. The boldness of the architects who constructed Gothic arches resting on slender pillars, excites surprise; but these roofs, which date from about the same period, are still more astonishing. The present mode of forming a roof was not then known, but was first employed in the seventeenth century. Many old churches have their roofs supported by timber frames (Dachstuhl)



nearly resembling that of the church at Kraschen. The beams are 80 ft. or 40 ft. long, and without support, either from above or below. Over the middle of these beams there usually lies a supporting beam (*Trägerbalken*), which is not fixed to the beams by iron screws, or fastenings of any kind; and which, instead of preventing their sinking, seems more likely to be a weight upon them. All the other roof fastenings, however closely they might be united, and riveted together, by the crossing of the strap with the collar-beams, &c., seem calculated to produce a pressure on the middle of the beams, rather than, like the hanging beam, to support them in that part. As to screws, cramps, braces, holdfasts, or iron-work of any kind, to give strength to the connecting members, there are none whatever to be found in these roof-frames.

During the present year I took down a roof-frame (*Dachstuhl*), similar to that represented by *fig. 17.*, which had decayed in

consequence of the repairs of the shingle roofing having been neglected. Under the beams, which were 35 ft. long, there was, in the middle, a support 9 in. high, which lay 43 ft. free, with only a very small resting-place at one end; yet not the least sinking, either of the support, or the roof itself, was perceptible.

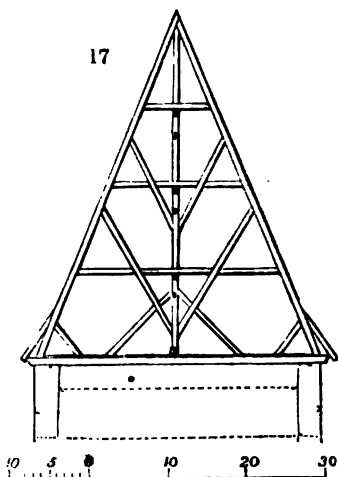
How is this inconceivable strength to be accounted for? One is inclined to believe that the great weight of the rafters (Sparren) pressing on the ends of the 30 ft. or 40 ft. free beams, together with the great mass of roof covering, prevents the sinking in the middle.

Many old experienced builders, whose opinions I have consulted, account for this extraordinary circumstance by the solid infrangible fibres of the timber itself, which was that of the hearts of very old trees. Be this as it may, I know that, after examining these beams, I have frequently been unable to discover which end of the timber belonged to the stem, and which to the top, of the tree.

A few years ago, in the course of some alterations in a nobleman's house in this neighbourhood, which had been built in the fifteenth century, it was found necessary to take down the roof-frame (Dachstuhl); but it was proposed to make use of the timbers, which appeared to be in a perfectly sound state; on taking them down, however, it was discovered that the heads of the beams, which lay scarcely 2 ft. from each other, were decayed; and the roof, over one of the apartments, had been prevented from falling in only by the firmly fixed laths (Stockholzer).

These circumstances prove the necessity of directing particular attention to the condition of old timbers and roof-frames, which are frequently in a decayed or insecure state. It is certain, that the necessary repairs in church roofs are frequently totally neglected, or long delayed; because the inconvenience of such neglect and delay is not so sensibly felt as it would be in dwelling-houses. The darkness within the roofs of churches, which are not lighted by windows of any kind, renders, indeed, every crack that may make its appearance in the roof plainly visible; but the signs of decay which present themselves in the beams and roof-frame are, for the same reason, unseen.*

* Several years ago, the falling of a heavy bell in this neighbourhood occasioned the governor of Breslau to issue an order for examining the security of
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But, to return to the church at Kraschen: its foundation walls must have been very strongly built; for, notwithstanding the continual digging of graves close against them, none of the cracks, which are so frequently found in old church foundations, are perceptible. The walls are 3 ft. thick, and are supported on each side by three strong pillars. The burnt tiles, of which the walls are composed, have evidently been prepared with great care; and in this consists the peculiar superiority, which distinguishes the buildings of the middle ages. The earth of which the bricks were made used, at that time, to be properly washed, and cleared of stones and other foreign substances: it was thoroughly worked, and the operations of framing and burning were very carefully performed. The manufacture of bricks is now every where carried on on a penurious scale; at all events, the labour which was, in former times, devoted to the business is now much retrenched. In my opinion, the principal faults are, the too great admixture of sand (which is put in to lighten the labour of working the brick-earth), and the employment of earth which is not sufficiently hard, or, more properly speaking, too watery, which facilitates the framing. These faults are attributable to the scanty payment now given for the labour. It may easily be imagined, that, when 1000 bricks are made for less than two rixdollars, the work cannot be very carefully executed.

The great roof of the Kraschen church is covered on each side with 48 rows of pantiles; and, owing to the steep form of the roof-frame (see *fig. 17.*), this enormous weight presses on the extremities of the beams; which, unless they warp, cannot sink in the middle. The binding of the roof likewise prevents the bending of the rafters, and enables it thus to resist the attacks of the boisterous winds to which the church, owing to its high situation, is exposed. In 1817, a large newly erected barn, which stood in a direction similar to that of this church, was completely blown down, though it had been built in a perfectly regular, and apparently secure, way.

The construction of old churches presents many inexplicable peculiarities, which would not admit of imitation, even though the same building materials could now be procured; and there are, likewise, peculiarities in their interior arrangement, the reasons for which are now unknown.

The high altar is always erected towards the east. The sacristy is never behind it, but always either on the right or left side of it; probably that the priests, on entering the church, might kneel before the high altar, according to the Catholic

bells. The accident, which was attended by some damage, was occasioned by the decay of the pin (*Zapfen*).

rites. The chancel is almost always smaller and lower than the nave; and it is invariably arched, even though the latter should not be so. The parish church of Neumarkt, however, forms an exception to the first of these rules; for in it the chancel is loftier than the grand nave. None of the older churches have upper choirs in addition to their organ-lofts; wherever these choirs exist in such churches, they have been erected subsequently to the original buildings.

ART. V. Remarks on Street Architecture. By Mr. FREDERICK LUSH.

IN walking over the city of London, no person fond of architecture can avoid observing the varied appearances which exist, sometimes, throughout a whole street, owing to the repeated alterations which have succeeded each other from time to time. One street is crowded with a variety of forms not deserving the name of an architectural composition, the proportions of which are quite irregular. The chief features in the elevation of the London street houses are those of the shop fronts, which are, generally speaking, a mass of combinations diametrically opposed to one another, and executed without any degree of taste or judgment. This practice has been followed in nearly every street that you can mention, and, unfortunately, prevails in Regent Street and Oxford Street. To prevent this, whenever the formation of a new street is projected, I would suggest that the designs of the shop fronts should be made to vary as little as possible, and that the upper member of the cornice should be continued in a straight line down the whole length of the frontage of the houses, except at intervals, where there should be a break, and a greater display of ornament introduced. As some trades and establishments require more accommodation than others, these should be placed in the centre, or most conspicuous part, of the street, and a few sculptured relievos might with propriety be added, indicative of the business of the proprietor, or a design well adapted for the site on which the premises are erected. The means of combining the houses, so as to form a continued style of architecture, or the association which one house should bear to the other, approaching to the symmetry and unity of system observed in public edifices, can only be sought for in the principal streets, or opulent districts; but, when such cases occur, we find them much deteriorated in effect by a portion of the street, or a single house, having been renovated, and looking new from fresh painting, whilst those adjoining remain untouched, presenting almost a ridiculous contrast. As

in a public building, or a private detached dwelling-house, a continued regard to uniformity is maintained; so, where a line of houses forms a mass, the same character should be preserved; because the houses, being in contiguity, bear an equal relation to each other. And, as gratifying sensations arise in viewing a regular continuation of arches from a commanding point of view, or a long range of columns, as in a Grecian temple, or down the aisles of churches; so, in a street, a succession of parts will raise the mind, by giving pleasure to the imagination. The new street commencing from the Mansion House, and terminating at London Bridge, is one of the best specimens of street architecture we have in this part of London; and, though uniformity is preserved throughout the whole, it is not carried to such an extent as to produce monotony. Every opposite house is not exactly alike: but there is no great necessity that the whole, or opposite portions, of a street should correspond in every respect, so long as the style or order is kept up. With regard to the application of the three-quarter columns, no particular fitness or utility is recognised in them; though the elevation would be deprived of a striking appendage if they were omitted, and the effect now acquired would ultimately be lost. As these columns are in connexion with the accompanying ornaments and details, and seem to perform some office, serving, also, as a means of shelter to the receding windows, they can with propriety be introduced. Semi or three-quarter columns, applied to large houses in the most public thoroughfare, when they appear to increase their magnitude, and add to the effect and beauty of the external decoration, give a certain degree of grandeur and additional force, unequalled by any of those ill-designed modillions, which, crowded together to form a substitute for columns, are usually the most inferior objects to any executed on the face of the building. The practice of adopting pilasters in the place of columns, to support a heavy projecting cornice, or scarcely any at all, is another instance quite contrary to any sound rules of principle or true fitness. Where the pilasters determine the situation of party-walls, or partitions, or where they aid to support the space contained between the openings, or perform some other useful purpose, they contribute materially to the general effect; but much of the harmony which ought to distinguish an edifice is diminished by insufficient, or ill-applied, pilasters.

Many such examples are too numerous for notice, in which absurdities are heaped one upon the other. Much of the beauty and general outline of a street consists, also, in the disposition of the windows, and in placing the entrances of each separate house in such a manner as not to appear too closely connected. Too

great a variety in the form of the apertures on the same front of a building, and their not being placed vertically one above the other, can never gratify the sight, and must dispose the spectator to entertain unfavourable opinions respecting the character of the building. Windows admit of external ornament, as they would look bare and naked without; but they should be relieved with little more than an architrave and dressings; and these and the door-cases should correspond with the columns employed, or other prominent parts.

But how often do we find the reverse of this; and how generally is the practice of introducing pilasters and semi-columns, supporting a pediment above, where they are totally inconsistent with the style and size of the building, adopted!

Many accidents take place from the corners of the streets, instead of being curved off, being left so as to form a right angle: but we will hope, now these subjects are more considered; that the method of rounding the corner houses will become general. If several streets intersect a principal one, where a greater distribution of light is required in the room, a bow window in the rotundity of every turn, on the same level with those in the front, but not to extend beyond the line of the streets of which it forms the right angle, would have the advantage of enlarging the room, and affording a better view of the adjacent town, than could otherwise be obtained. We often see the uniformity of architecture in a street destroyed by the various shapes of the roofs; and by the necessity of lengthening the chimneys of the houses at the corners, in order to prevent smoky rooms. Curved, or Mansard, roofs are best adapted for such occasions; and they have an advantage over the common roofs, as less expense is incurred in their construction, owing to the reduced quantity of brickwork: but all the roofs could be easily made of one description, either curved or hipped. The effect, which was destroyed by raising the chimney shafts at the extremities of the street, could be preserved, in a great measure, by having them of the same height as the rest, with a thin metal cap permanently affixed on the top, to prevent the downward blasts of wind, which often occur in such situations, and render the rooms smoky. In applying such a cap, there would be no occasion for a chimney-pot; and, when the flues were carried up the necessary height, the upper surface should be splayed off, so that when eddies of wind, in a steady horizontal direction, acted upon them, they would be obstructed, and rise to mix in the air again.

Charles Square, Hoxton, Nov. 27. 1835.

ART, VI. *On the ancient Buildings of England; their Foundations; their Walls of Brick and of Stone; and the Difficulty of ascertaining their Age, merely from the Material, and the Manner in which it has been used.* By R.

THERE are some remains of British masonry in England, on which traces of the chisel are discovered, which evidently show that the inhabitants of our island had a greater knowledge of the art of building than was necessary for the erection of mere huts and hovels, before the Roman invasion; and we may, therefore, naturally conclude that brick-making, which is so immediately connected with masonry, was not altogether unknown to them. Indeed, the greater number of the useful arts, which were known and invented by the inhabitants of the antediluvian world, were preserved and used by their descendants; and although, in many parts, the people who led a pastoral or hunting life lived in tents and caverns, because, from the nature of their occupation, they were obliged frequently to shift from place to place, and, therefore, neglected and lost the useful arts; yet, among those people by whom the first cities of the world were founded, all the known arts useful to mankind, and useful in society, in which the advantages of the distribution of labour were appreciated, appear to have been preserved and practised.

We cannot ascertain the precise time when Britain was first discovered, or when the discoverers made a settlement in it; but, in all probability, they were driven by chance upon the coast, and came from a country where the arts of ship-building and navigation were known, and, consequently, other useful arts. The arts being once introduced, necessity would compel their improvement, and the invention of others. An increase in the number of inhabitants would, of course, increase the quantity of land to be cultivated for sustentation; and with agriculture the art of building would make progress, as more habitations would, of necessity, be wanted. But, although the first settlers on our island, doubtless, brought some knowledge of the arts with them, they must have learned much, in this respect, from the Phœnicians, and people of other civilised nations, whom commerce had brought to their shores. They had not, however, made much progress in the art of masonry before the invasion of the Romans; and, although the Britons did not derive their first knowledge of building from these people, it must be confessed that this, like every other art, was greatly improved after the country was subjugated to, and under the influence of, the knowledge and power of the invaders: for Cæsar, on his first expedition, found that the habitations, in general, were mere huts, crowded together without any order,

or formation of streets. But, while, in these houses, which were suitable to the plain and simple manners of the inhabitants, little stone or brick could have been used, yet the existence of Stonehenge, which is considered to be a British work, and the many Druidical temples, show that they were not by any means ignorant of the art of masonry, before the time of the Romans.

The manners and customs of the ancient Britons, however, before Cæsar's first expedition, are so little known, that, with the exception of the Druidical altars, there is great uncertainty respecting the other kinds of buildings which they are said to have erected; for we cannot prove that they had any peculiar mode of working, or any particular material, which the Romans, or others subsequent to them, had never used.

The many remains of Roman buildings in this and in other countries show that they were particularly careful in laying the foundations of their walls; and the excavations were, in general, not made until a solid stratum was obtained. Where the ground was found to be soft or marshy, it was strengthened with piles of alder, or of oak, partially singed, which were driven in near to each other, and the spaces between them filled with charcoal. The tops of the piles and the charcoal being brought to a uniform level, the foundations were begun with rough stones bedded in clay. When the excavations were made, and the ground found to be solid, the foundations were laid with rough stones upon the natural soil; sometimes they were commenced with paving-stones, laid flat, and at other times set on edge, in the clay; and, occasionally, the walls were built on layers of large pebbles bedded in clay.

The foundations, therefore, of ancient buildings being laid in, and carried up with, clay, is no proof of their being British; because the Romans, in general, laid their foundations with clay, while the superstructure was cemented with mortar.

In the fifteenth century, the foundations of buildings were also laid without mortar, in a different manner from that described. The excavations being made, the bottom of the trench was rammed as firm as possible; on this was laid a stratum of sand or gravel, 8 in. thick, which was also firmly rammed; and the whole was covered with a thin coat of ashes, or lime core. This being settled, another stratum of gravel or clay, laid upon it, completed the first part of the foundation; the latter being likewise well rammed. The remaining part of the foundation was carried up to the level of the ground with rough stones bedded in clay.

As the Saxons and Normans followed the Roman methods in laying their foundations, either with or without piles, as occasion required, it is difficult to distinguish with certainty the age of a building (erected even after the Roman settlement),

either from the manner in which the foundations are laid, or from the kind of material used in them. Of course, the buildings of the ancient Britons might be distinguished, did they exist; for the builders did not, for the huts they inhabited, and which Cæsar found them in, require that strength in their foundations which the Romans found necessary for their buildings; but, although the different sorts of masonry used in Britain were introduced by the latter people, it is certain that the ancient Britons used stone, where timber was scarce, even in their huts, as door-posts and lintels, which were mortised and tenoned after the manner of the carpenter; and in their rudely sculptured monuments, altars, and temples, before the Roman invasion. When we consider the many sculptured caverns and temples which were, at this time, made and erected among the Egyptians and Phœnicians, and the traffic carried on between these people and this country, the knowledge of masonry, to a certain extent, anterior to the Romans, may be easily accounted for. From these people the Britons might either receive instruction, or be furnished with men for the erection of their works of masonry.

The Romans, it would thus appear, did not introduce the use of stone in this country; and, although they perfected masonry during their settlement, architecture was, indeed, very rude while they remained masters of the country; and it was certainly first improved by the Saxons, but more tastefully and judiciously by the Normans.

The Roman walls, in general, were built with cement, and tiles or flat stones; which latter were laid in courses, at convenient distances, to bind the parts together, and at the angles, to strengthen them. These bands consisted, occasionally, of three or four courses of stones, laid through the wall, or on the top of so much of it as was built, and they were placed at the distance of 2 ft. or 3 ft. above each other, in the manner of shelves; the intermediate spaces being filled in with a cement composed of ragstones, or of mortar and pebbles, or of such other materials as the locality conveniently afforded. There is no British work now in existence, that is, built by Britons, in this manner: but we must not thence conclude that they were ignorant of the art of making bricks or tiles before the Romans settled in the country; because a correspondence subsisted between them and the Gauls (to whom the art of making bricks was known, and by whom it was practised), and whose manners and customs they might acquire a knowledge of, as well as they did of their religion. The unbaked bricks used by the Britons, which were composed of clay and straw well mixed, and dried in the sun, were, however, differently made to the unbaked bricks of the Romans, which were suited to a hotter climate.

During the settlement of the Romans, and after their departure, bricks were only employed where other materials could not be procured to suit the intended purposes; and, therefore, they were made to supply the place of stone, in cases where the nature of the work required it, and where necessity obliged them to be used in turning arches, or in forming bands to strengthen the walls; and, from this want of proper material, the builders had frequently to use ragstones and pebbles for the greater part of their work. The Saxons, also, built, after the Roman method, with tiles and square stones; but the former were very sparingly used when the latter could be easily procured. This not only shows that the art of tile or brick making was by no means lost in Britain after the departure of the Romans; but, further, that the materials used in a building cannot determine by whom it was erected; and that some of the buildings by the Saxons and Normans might, or might *not*, have been erected out of the ruins of old Roman walls. Necessity, no doubt, obliged the Saxons and Normans to follow the plan adopted by the Romans, of making bricks to suit their purpose, where stone could not be procured.

There are two churches at St. Albans, one built by the Saxons, in the tenth century, and the other by the Normans, in the eleventh century, which are erected entirely with tiles, or bricks, of the same sort as those used by the Romans. In both of these buildings many tiles may have been used which were gathered from the remains of old Roman walls; but it is evident that many of them must have been new, as the forms could not be cut in the old Roman tiles, from their hardness, to suit the situations in which some of them are placed. Neither is it probable that the old Roman walls could have furnished sufficient materials for the Norman buildings; especially as their predecessors, the Saxons, would, probably, help themselves unsparingly while any that were worth taking remained. This will appear more obvious when we keep in mind that, in the Roman walls, tiles were only used for bands, and to strengthen the angles of buildings, so that the supply from them could not have been so great as may have been imagined; more especially when we consider that few old tiles could be extracted from the cement, which had, through time and the quality of its composition, become very hard. In the abbey church of St. Albans, and the church of St. Botolph's Priory in Colchester, new tiles must have been used in several parts of the work, which required to be neat and exact; and, in all the circular work, in the pillars and newels of stairs, and for those ornamental parts peculiar to Saxon and Norman buildings, bricks must have been moulded for the several purposes; while the work in these buildings is so well executed, that it must have been done by experienced work-

men, and chiefly with new materials; though the interior parts of the walls might have been filled in with old materials from the Roman remains. There are, also, many walls, in which the tiles are used in bands, in the manner of the Romans, that, when strictly examined, are found to be of Norman architecture.

It thus appears that wall tiles, or bricks, were made and used by the Saxons and Normans in their buildings, in the same form, and sometimes in the same manner, as by the Romans; and that, after these people left Britain, tiles and bricks continued to be made in the same manner until the twelfth century, or the time of Henry II.

The bricks formed during this age were not made to a standard, as at the present day. Those of the Saxons and Normans were similar in size to those made by their predecessors, and measured nearly $17\frac{1}{2}$ in. long, by $11\frac{1}{2}$ in. broad, and were nearly 2 in. thick; but these dimensions varied in many cases, and were guided by the nature of the earth of which they were formed, and by the purposes for which they were intended. The Romans, as well as the Saxons and Normans, had tiles moulded for various kinds of work; those for the pillars which supported the floors were, in general, circular, and about 9 in. in diameter; while those used for floors, and for covering roofs, measured 22 in. square, and upwards.

The English continued to make their tiles after the Roman manner until the beginning of the twelfth century, as before observed; at which time they began to change the form of them, and continued to do so until about the year 1320; when the extensive commerce carried on, at this time, by Flanders, led the British to acquire a knowledge of the Flemish manners and customs, and, among other things, of their mode of making bricks, the forms of which, being smaller, were much more convenient than those previously in use, and were consequently adopted. These bricks, with a slight alteration in size, were the same as those at present in use. The name of *bricks* was not, however, given to them until about the year 1490, their previous name having been wall tiles.

In the fourteenth century the wall tiles, or bricks, used in some buildings, were made after the Flemish manner, but of various sizes; some of them being 12 in. by 6 in., and by 3 in.; and others $10\frac{1}{2}$ in. by 5 in., and by 2 in. These wall tiles were, about the year 1327, sold at 6s. 1d. the 1000; about 1377, at 6s. 8d.; about 1400, at 5s. 8d.; and about 1420, at 6s. 8d. About the year 1490, brick, intermixed with ornaments of stone, became the most fashionable manner of building; and from this period the Flemish wall tiles have continued in use until the present time, under the name of bricks.

The different kinds of masonry introduced by the Romans,

and used in their time by the Britons, were almost lost, though not wholly so, during the unhappy state of the country after the departure of the former people; and their successors, the Saxons, when they were converted to Christianity, understood the art so little, that the few churches and monasteries of any note which they erected were built by foreign masons after the Roman manner. These foreign masons (introduced by the Saxons) followed so closely the system of building which the ancient Romans had previously introduced, that even the ornaments of their erections were after the Roman manner.

The materials used by the Romans in their walls were such as could be most easily procured near the place where the erection was to be made. In many parts ragstones were to be had, with little trouble, near the surface of the ground; and, in other places, pebbles and flints were procured in abundance, which were used with ligatures of flat ragstones, or with flat baked tiles when flat stones could not be conveniently had. In all cases, however, where stone could be procured of a proper size and quality, it was used for facing the walls, while the middle was filled up with flints and pebbles..

Those quarries whence the builders of after-ages derived their stone appear not to have been discovered by the Romans, as they seldom used any stones larger in dimensions than may be found, in many places, near the surface of the earth. Even after the Conquest, the builders had, at first, to be supplied with large stones from Normandy; but the expense and inconvenience of carriage, and the many churches, and other extensive buildings, which were undertaken when the Normans had fully settled themselves in the country, obliged them to open quarries, where stone could be found, as near as possible to the site of their intended buildings. Where stone could not be found the neighbourhood of an intended erection, and the expense and inconvenience were too great for them to be brought from a distance, wall tiles were made to suit the places where squared stones were generally used; and the other parts were built with firestone, ragstone, pebbles, or flintstone. It may here be observed, that the Norman masons seldom used the soft freestone in buildings, in any part exposed to the weather; and, in all cases where freestone of any description was used externally, it was placed in the work in the same position as it lay in the quarry, which rendered it not only less liable to be split by the weight it had to sustain, but also less subject to be torn asunder by frosts.

The most ancient sort of masonry used in England is that of cement and tiles, as used by the Romans in various buildings. The walls were built with small rough stones mixed with coarse mortar, and with tiles laid at convenient distances to bind them

together, and at the external and internal angles for strength. These bands, which consisted of three or four courses of tiles, were laid through the wall 2 ft. or 3 ft. above each other, and the intermediate spaces filled in with pebbles or ragstones, and cement. This sort of masonry, which, as before observed, was much used by the Romans in this country, is also to be found in other countries which they conquered. Whether this method was used by the Britons, after the departure of the Romans, is uncertain; but it was probably followed by the Saxons; and the Normans had so closely imitated it in their buildings, that the latter have been taken for Roman works. Although the walls of cities built by the Romans were seldom entirely of bricks, or with facings of bricks, or flat ragstones laid in regular courses, having the interior filled in with rough stone, yet many of their principal buildings, both in this country and in other parts of Europe, were executed in this manner. The Saxons followed this method in many of their buildings, where stone could not easily be procured. In Norman churches, also, where large pillars are employed, their outer facings are built in this way, with squared stones laid in regular courses, the middle being filled in with cement composed of mortar and pebbles, or ragstones; and, when the arched or flying buttress was introduced, it was built in this way, as being the strongest and most beautiful method. Where flat ragstones were in abundance, very strong and durable, though not very handsome, walls were formed by laying them in mortar, in such a manner as to bind each other in regular courses through the thickness of the wall: the angles were strengthened, and the arches and openings were finished, with squared stones. This manner of masonry was used by the Greeks and Romans, and it is found in buildings of all ages in England. It is employed in many churches built after the Conquest; and it was used in King's College Chapel, Cambridge, where the joints are found to be set with small black flints.

In the Saxon buildings, and in most of the buildings erected soon after the Conquest, it is singular to observe that the walls, pillars, and arches are built of such small stones, that the courses seldom exceed 7 in. or 8 in. in depth, although large stones could have been easily procured. The latter were seldom used, except for particular parts of the work, or for bases and capitals of pillars; and there are many large churches and lofty towers built entirely of pebbles or flintstones, or sometimes of pebbles and ragstones, where such could be easily collected, except the angles of the walls and the window and door finishings, and other parts which could not well be executed without squared stones.

Another kind of masonry introduced by the Romans, or by

the foreigners brought to this country who built after their manner, was by squared stones being placed on their edges, diagonally, in the wall, and appearing like the meshes of a net; but this disposition of the stones was discontinued for its want of principle, and its want of solidity and strength; the Saxon and Norman masons, therefore, never used it where strength was required, but merely for ornament in the filling in of arches, &c.

The buildings raised with pebbles, &c., by the Normans, which were nearly after the manner of the Saxon buildings, and constructed of the same sort of material, consisted of three kinds. The first sort is that where pebbles only were used; the outsides of the walls being laid with stones, of about the same size, in regular courses, and the angles built with squared stones. The next is where pebbles and rags were used, and the angles strengthened with squared stones 2 ft. high, and 6 in. or 7 in. square, which were tied in the wall by the superincumbent weight of other stones laid on the top of them. The outer shell of the wall was raised to the height of one of these stones, with rags on one side, and pebbles on the other, and the intermediate spaces filled in with cement and mortar; when this was sufficiently dry, the square bond-stones were placed on the angles, and flat ragstones, the height of the bond-stones, formed the next course: the course immediately following was then proceeded with as at the commencement. The third sort of masonry was composed of pebbles and ragstones, laid regularly; and, at every 2 ft. or 3 ft. in height, several courses of ragstone were laid angularly on the wall, in the "herring-bone" manner, as it is technically called. These different modes of building with rough irregular materials presented but a rude appearance; therefore, the small churches and other buildings erected in this manner were always plastered on the inside, and frequently on the outside, with a composition of lime and sharp sand. In many of the structures erected with wall tiles after the Roman manner, the walls, the pillars, and the arches were finished with the same sort of plastering as used for the walls built of pebbles.

From the foregoing remarks on the different kinds of masonry used in this country from the first settlement of the Romans, it appears that there is little difference between that introduced and practised by them, and that subsequently practised by the Saxon and Norman builders, under the denomination of Roman works; and the same modes of building were afterwards used, with only the change necessary to suit the different styles of architecture at different periods. Hence the difficulty of ascertaining the exact age of a building, from the materials employed in constructing it; or of discovering the methods of using the

materials, especially in those buildings erected with new materials before and after the Conquest, when we have no other means to assist us in the discovery.

There was no considerable change in the method of building, from the time it was first introduced by the Romans until the time of Henry II., when great alterations began to be made in the style of architecture. At this time highly polished marble came into use for capitals and bases, and was sometimes used in the shafts of pillars; but about the year 1340 it began to fall into disuse, either in consequence of the labour and expense of polishing, or because it was not of long duration. Though marble was much used in the twelfth and thirteenth centuries, it does not appear to have been used in any way by the Britons, or by the Saxons, before that time, except, by the latter, as tombstones and fonts, and occasionally in the flooring of churches; though they had, in general, figured tiles for this purpose. In the methods of building with stone there were only such alterations made as the changes in the Gothic styles occasioned, from the early part of the thirteenth century until the introduction of Grecian architecture in the time of Henry VII.: but it was within that period that the wall tiles, which were previously made of any convenient dimensions, were formed after the Flemish manner, as before observed. The art of using the Flemish bricks was not, however, well understood by the tilers of that age; nor were they thoroughly acquainted with the Flemish bond (which is the strongest method used in building) until the time of Henry VIII. About this time, or between 1500 and 1540, it was customary to chequer the fronts of brick and stone buildings with flints, occasionally in regular square figures, but frequently intermixed with stone, in imitation of open Gothic work. Buildings in this manner had a neat and pretty good effect. The brick buildings of this time may be known by being chequered with glazed bricks, of a darker colour than the rest of the fronts, which were built of very hard and well-burnt bricks, of a deep glaring red colour. The window-frames and mullions were occasionally of stone; but frequently formed with bricks moulded on purpose, and coated with stucco, to imitate stone.

From the middle to the end of the sixteenth century, the ornaments which were introduced in the time of Henry VII. were frequently imitated in burnt clay, to adorn the fronts of the houses and chimney shafts. At this time the rage for ornament was so great, that Grecian and Gothic ornaments were incongruously mixed; and the practice continued until about the commencement of the seventeenth century, when plain chimneys became fashionable, and moulded bricks were accordingly disused. In this, as well as in the preceding ages, many buildings

were very badly executed ; and it was not until after 1625, or in the reign of Charles I., when the arts were revived, that building with brick began to be well understood, and to be well executed, under the superintendence of that great master of architecture, Inigo Jones.

89. *New Church Street, Paddington, Feb. 7. 1835.*

ART. VII. *A few Remarks on ancient Foundations and modern Concrete.* By CHARLES REED, Esq.

BEFORE I begin to speak of modern concrete, it may be proper to say a few words on the manner of laying foundations among the ancients ; for, of all the parts of an edifice, the one of most vital importance is the foundation. Palladio, speaking of foundations, says, "Of all the errors in building, those are the most fatal that are committed in the foundation ; because they not only endanger the whole structure, but they cannot be rectified except with the utmost difficulty : the architect, therefore, must take great care to make choice of a good foundation : " and here he shows the extreme importance of practical, as well as theoretical, knowledge in the profession. We may naturally suppose that the original habitations of mankind were of the simplest kind, and formed of caves, branches of trees bent down to the earth, or by some other methods equally simple ; but as men increased in civilisation, so would they increase in wants ; and wooden structures next followed. For these but little foundation would be required ; poles, stuck into the earth, were all that was necessary : but, as mankind made still greater strides towards civilisation, the inconvenience, instability, and perishable nature of wooden buildings became evident, and edifices of stone were erected. Probably the first stone erections were only altars ; for in the Scriptures we frequently read of altars being raised, without mention being made of temples. Noah built an altar : and, from the expression *built* an altar, it may, perhaps, be presumed to have been of small stones ; for, had it been of but one stone, the expression would, most likely, have been, *raised* an altar, or some word of parallel meaning ; as we afterwards see, when "Jacob rose up early in the morning, and *took* the stone that he had put for his pillow, and *set it* up for a pillar : " and from this it may also be inferred the stone could not have been very large, as it had served him for a pillow. After these diminutive erections, some of the earliest and largest edifices are recorded to have been built by the Assyrians ; though it is difficult to understand, in the present day, the accounts which historians have transmitted to us of their magni-

tude. Diodorus, speaking of the city of Nineveh, built by Ninus, says that its walls were 100 ft. high, and so thick that three chariots might go abreast; and that there were 1500 towers 200 ft. high. But Semiramis seems, when she built Babylon, to have far outdone Ninus; for the walls of that giant city were 350 ft. high, and 87 ft. in thickness: of these the materials have been transmitted to us, though not the mode of the foundations. Bricks and bitumen were the substances: but all other particulars are denied us, and no remains exist at this day; nay, even the very sites are not with certainty known. In the walls of the hanging gardens more moderate dimensions were used, as they were but 22 ft. in thickness; and, from parts of the context, and the recent discoveries of Rennel, I think we may infer the foundations of these were laid on large stone slabs, thickly covered with reeds and bitumen. These erections are gone by; but the pyramids of Egypt exist, their gigantic sphinxes, their quays, their temples, and their obelisks; so do the great wall of China, and the immense erections of the ancient Mexicans; the accounts of which would have been equally difficult of belief, had they been transmitted to us in the same manner. Of the practical mode of building walls and foundations in Egypt we have not many accounts; for travelers are not generally sufficiently versed in the more professional mode of viewing an edifice, or look at them with a hasty eye; besides, the difficulty of arriving at the foundations of ruins, and the great height, generally, to which the sand, earth, and fragments have raised the ground above the original level, in many instances entirely covering the edifice, further prevent any accurate account of the foundations being given. From the arid nature of the soil and climate, and the great thickness of the walls, foundations were not required to be much more than continuations of the walls above; hence we find, that the foundations have not always a wider spread (technically termed footing) than the superstructure, which was further rendered unnecessary by the immense width of the walls themselves. Cement seems not to have been used, as almost all their temples are constructed with stones, so nicely wrought, that it is unnecessary; although one of the smaller pyramids at Memphis is an exception, being built in only six steps, or ranges, of huge misshapen blocks, and cemented with a very large proportion of mortar, filling up every interstice. The materials of walls and foundations in Egypt are, generally, sandstone, breccia, granite, and brick dried by the sun, but never burnt in the modern way. Deeply is it to be regretted that no Stuart has arisen amongst us, to give more detailed drawings and descriptions of those sublime monuments of Egyptian skill, when so many of the finest structures remain perfectly complete, and

others, with trifling difficulty, might be restored. But, alas ! perhaps the edifices of Memphis and Thebes, Meroe and Ombos, Latopolis and Apollinopolis, Luxor and Carnak, in the same city, are doomed to perish for want of illustration ; and may only be handed down to posterity like the meagre accounts, in the present day, of Babylon, Nineveh, and other great cities, through Herodotus, Diodorus, Strabo, and others, in so imperfect a manner as to leave a doubt of the accounts, as to what to believe, or what to reject.

Of the earliest buildings in Greece now remaining, the Cyclopean walls of Tiryns, Mycenæ, &c., supposed to have been the same as those mentioned by Homer, are the most prominent, and, perhaps, the most singular. This Cyclopean walling is, probably, what Vitruvius means by the word *Antiquum*. The walls of the acropolis at Tiryns are 25 ft. thick, with two galleries of 5 ft. each in them : the uses of these galleries can now only be conjectured ; but they are not peculiar to Tiryns, as they are met with in the walls of the acropolis of Argos, and other Pelasgic cities. These walls are constructed of large unhewn stones, of all sizes and shapes, 8 ft., 9 ft., 10 ft., and 11 ft., by a proportionate width, without cement, and the intervals are filled up with smaller stones. The walls of Mycenæ seem to have been of later date, judging from their being constructed of stones better shaped. These walls are but 21 ft. thick. Generally speaking, the more modern the wall the better constructed, and the thinner. The foundations of these, as of all Cyclopean walling, are formed of stones much smaller than the superstructure ; a practice not consonant with stability, or with the practice of the moderns. At Drymæa, Panopeus, and Eleutheræ, the walls are of still later date, being formed of parallel courses, though with larger stones here and there ; and being but 9 ft. and 8 ft. thick, though without cement, and little care seeming to have been used in making bonds, or ties of any kind. This is worthy of notice ; as in the walls of the temples of later date much attention was paid to this mode of structure ; and though these, also, were built without cement, the want of it was made up by a liberal supply of metal cramps. In Cyclopean walling, generally speaking, cramps were not used ; though the walls of the Piræus are an exception, being 8 ft. thick, and strongly cramped. All these walls rendered any very great art unnecessary in their foundations, their breadth being sufficient to support them ; but more care seems to have been bestowed upon the foundations of later edifices, as we learn of the Temple of Diana at Ephesus, which being rather extraordinary, is here given in Pliny's own words : —
 “ In a marshy soil they placed it, that it might not be affected by earthquakes, or subject to any rendings ; and further, that

they might not lay the foundations of such a vast pile upon a yielding unstable bottom, they formed a stratum of pounded charcoal, covered with fleeces of wool. The length of the whole temple was 425 ft., the breadth 220 ft., the columns 127 (in number), the height of each 60 ft." What would our modern builders think of a marshy soil, with fleeces of wool for a foundation? whatever they might think of the more common material of pounded charcoal. Here I will mention a species of walling much in use among the Greeks, that is, the style called *emplectron*, formed of two external casings of stone, and having the interior filled up with rubble-work and mortar; the heading stones generally tailing through, so as to form a good transverse bond. This rubble-work is the only kind of material, in use among the Greeks, bearing any resemblance to our modern concrete; but it was not, I believe, ever used as foundations. Among the Romans a far greater variety of materials was used in foundations than among the Greeks, who depended much on their immense blocks of stone, their admirable nicety of joint, and the ponderous thickness of their walls; which, in all cases, even those of their temples not excepted, were of immense thickness: the walls of the temple of Apollo Didymæus may be mentioned as an example, being 8 ft. 10 in. in thickness.

We learn from Vitruvius that two parts of *puzzolana* to one of mortar, thrown into the fosse, formed a common foundation among the Romans, being thrown in like our concrete, and making a mass which became so indurated, that scarcely any thing less than an earthquake could disturb it. This is partly to be attributed to the great quantity of iron in it decomposing the water, as is found in all cement containing any great quantity of argillaceous earth and iron. The component parts of *puzzolana* are about 60 siliceous earth, 20 of argillaceous, 5 calcareous, and 15 of iron. Artificial *puzzolana* is sometimes made of forge ashes and earthenware; also broken bricks, tile, and such like, but not equal to the original from *Puzzuoli*, whence it derives its name among the moderns; it being called *terra puteolana* among the ancients, from *Puteoli*, its ancient name. It is most useful in building in water, and was extensively employed by *Smeaton* in the *Eddystone* lighthouse.

The Romans also made use of piling to a great extent, particularly in marshy places, where the earth was dug out, and piles of scorched oak and alder driven down into the sound earth, the intervals being filled up with pounded charcoal, and the whole covered with broad stones laid transversely; this they were enabled to make do, from the diminished thickness of their walls; those of their temples, generally, not exceeding 2 ft. 6 in., or 3 ft. Rubble-work, grouted with hot lime and sand, was also very extensively used in the same manner as the *puzzolana*;

that is, it was thrown into the foundation fosse, and allowed to remain a sufficient time to become indurated; the superstructure being then carried up upon the upper superficies. This kind of foundation seems to have been principally used where large masses were to be erected, such as the foundations of towers, obelisks, columns, and piers of aqueducts; in the latter it often served as foundations and core, as in the case of the Claudian Aqueduct at Lyons. The facing was the *opus reticulatum* of Vitruvius; that is, the ashlar stones were laid diamondwise upon their arrises, making the ends appear like network; whence its name *reticulatum* among the Romans, and *dictyotheton* by the Greeks. In these piers the bottom was of brick, and then the ashlar was carried up a foot or two, and the central portion filled up with rubble, sand, flints, &c., grouted with liquid mortar. The Romans were ever especially careful to well beat up and mix their mortar; and were so particular respecting this, that, if possible, they carefully avoided the action of a burning sun, considering it nearly as hurtful as that of frost. To this care is, owing the extreme solidity of their structures, and not to any secret, or superiority, in the making of their mortar.

Among our Saxon progenitors the same mode of using rubble foundations was put in practice, having the Roman method, doubtless, transmitted to them by the aboriginal inhabitants, or discovering it from Roman remains existing in their day, but which have now perished; though, among the numerous Roman *castra stativa* then erected, a few still remain; the most perfect being that at Richborough, the walls of which are built externally of flint and brick, with loose sand, stones, lime, &c., filling up the centre. It was the opinion of Sir Christopher Wren, when taking down the old Roman cathedral, the predecessor of the present one of St. Paul's, that it was built on the remaining foundations of the more ancient Saxon church, as he found them composed of rubble and very hard mortar, well mixed together. We have not, in Britain, any walls equalling in thickness the Cyclopean walls of Greece and Latium; but, nevertheless, we have still some remains that will not disgrace the name of our ancestors, in point of stability, or ponderosity of walling. The Roman walls of Richborough are 13 ft. in thickness; those of Porchester Castle are 12 ft. thick; Norwich Castle, 11 ft.; and Conisborough, 10 ft.; all of which are of the Saxon era. Of the Norman era, we have the keep of Tunbridge Castle, built by Richard de Clare, in the reign of William Rufus, 12 ft. thick; the keep of Rochester Castle, built by Gundulph, 12 ft. thick; and numerous others, some of greater magnitude, and decreasing down to 7 ft., as at Lewes Castle, and even of less dimensions. Many of the ancient walls were formed of a species of concrete, by having a framework, consisting of two vertical ranges of

boarding a few feet high, and as far apart as the intended thickness of the wall: into it were thrown the usual components, of sand, flint, pebbles, and other stonework, and hot lime; which, after a short time, becoming sufficiently hardened, the framework was removed, and another portion added in the same way. This was principally used in the low fence walls surrounding rich abbey gardens, but was also employed in more important works, as at the walls of Aldborough church, which are supposed to have been done in this manner, and are formed of found stones and cement.

Piling, among our ancestors, was also much used, Pevensey Castle being on large piles, which are covered with immense slabs. Timber was often worked into the walls of foundations, as we see at Tunbridge Castle, in the manner of modern bond. Ingulphus, speaking of the monastery of Croyland, Lincolnshire, which was built on a marshy foundation, says that piles of oak and ash were driven down, and earth and sand well rammed into the interstices.

Numerous other methods, too long to mention here, were used in Britain and other countries; such as the fine system of piling in Venice, and, also, in Holland, where tarras filled the intervals; the method, so generally adopted among the Italians, of planking; and the use of slabs in other parts of Europe. Of late years, a new method, or, at least, a remodeling of an old one, has been adopted, to which I am now about to call your attention, having had peculiar opportunities of observing its properties and effects. I allude to the composition called concrete. The components of this are, coarse rounded pebbles, about the size, and somewhat of the shape, of a chestnut, which have always with them a portion of very coarse sand, dug out of the bed of the Thames, and called Thames gravel, and good stone lime; the whole being well beaten up, and thoroughly intermingled together. This is thrown down from a height of 8 ft. or 10 ft., but should never be less than 8 ft., into the foundation, which is dug out to the width the concrete is intended to be. During the operation of filling it in, men should be employed to tread, or puddle, this down; and on no account should a layer of more than 12 in. in depth be thrown in at once. This, in a short time, becomes so indurated as to be as hard as the firmest rock; other layers, of the same thickness, are then added, until the required depth of concrete for the foundation is attained. Much controversy has existed, as to what should be the relative proportions of lime and Thames gravel; and, from the result of a series of experiments, which have been tried by the first practical men of the day, I am enabled, with some little confidence, to say, that the best proportions are, one ninth of good Dorking or Meastram stone lime, and eight ninths of Thames gravel;

in which will necessarily be a portion of very coarse sand, of the size of fine gravel. But, in addition to this, I think, perhaps, if another ninth of common sand were added, the concrete would be firmer. Calcined limestone, when wetted, falls into powder, and becomes a stiff paste, called hydrate of lime, which, whether in the shape of mortar, or grout, in the process of drying, crystallises, leaving minute apertures between the different sets of crystals. Now, if any considerable weight rests upon this, the stalactiles, by the destructive force, break; and that which was before composed of numerous crystallisations, with interstices between them, becomes a powder, neither so hard, nor durable, as it ought to be; but, if the interstices were filled up with particles of sand, and the lime, instead of forming crystals, were only used for its legitimate purpose of cementing these numerous particles together, a firmer mass would be produced, as it would contain a greater quantity of one of the hardest substances in nature, silex, instead of lime; sand, also, has the property of not increasing its bulk, whatever quantity of moisture may be applied, a remark not applicable to calcareous substances. As large pebbles form the great portion of the solidity of the concrete, so, also, should the spaces between each pebble, instead of being occupied by comparatively soft lime, be occupied by substances equally solid with the pebbles; which can only be accomplished by the addition of minute, yet solid, particles, such as sand; whilst the lime is only used to cement the various bodies together, and so to form an aggregate sufficiently indurated to sustain the weightiest structures. Great care should be taken that all argillaceous, or earthy, matters should be carefully washed away, and the whole well beaten up when dry, and small quantities gradually added until of due consistence; in all which circumstances consists more than one half of the excellence of the whole material. Of all the sands used for this purpose, pit sand is the best; and it should feel dry, and crackle when abraded between the fingers. River sand is the next; but white sand, or that from the sea, should on no account be used; the angles of the particles of sea sand are broken by constant attrition, and it contains so much saline matter, as to render the whole damp and carious. The superiority over piling, and admirable effects of this invaluable composition, have been fully shown in the Custom House, near London Bridge, where this kind of concrete was extensively used, when the former failed. It has, however, been more extensively used in the foundations of the New Westminster Bridewell, Tothill Fields, by its very talented architect, Mr. Robert Abraham, than in any other building I know of; the site of this building having been formerly a marsh. I have known it used successfully in large airing yards, where the whole area was covered with it to the depth of several feet,

and the superficies spread over with gravel. It would, also, be useful for cores of piers, and abutments to bridges. For the Tyro in architecture, I will just add a method, by which he may know how to find, with tolerable accuracy, the necessary quantity of concrete which should be used to any particular wall, or building. For the depth, to every four courses of brickwork above, or every foot long, one inch in depth of concrete; and let the breadth be the thickness of the walls beyond the footings on each side.

Of all the systems for foundations, ancient or modern, this, I think, will be found to answer the best, for stability, freedom from dampness, economy of time and labour, and simplicity of execution.

December, 1835.

REVIEWS.

ART. I. *An Historical Essay on Architecture.* By the late Thomas Hope. Illustrated from drawings made by him in Italy and Germany. Royal 8vo, 2d edition. London, 1835.

(Continued from p. 34.)

CHAP. XIII. *Derivation of Persian, Mahometan, and Moorish Architecture from that of Byzantium.* The artists and men of learning of Constantinople were sought for, while that city was the most civilised of Europe and Asia, by every other people, as well by the old Asiatic monarchs as by the new sovereigns of Europe. Greek architects were in great request with the Persians, whom they taught to construct the arch and the cupola. Metrodorus, a Persian architect, established himself at Constantinople; and another Persian architect was employed by Justinian the Second. Hence the reciprocal influence exerted over each other by the taste of Byzantium and that of Persia.

The Arabs did not imitate the Greek architecture, until they had adopted the religion of Mohammed:—

“As soon, however, as, under the Abasside kaliphs, they began to exchange the asperity of indiscriminating bigotry for the elegancies of cultivation, they, too, like the Persians, put themselves under the tuition of the nation whose preeminence all others of the middle ages acknowledged. Grecian astronomers, mathematicians, and physicians, Grecian grammarians and linguists, were invited to every Saracenic court; and we have it as an historical fact, that about the year 820 the kaliph Al-Mamoun-Abdallah, son of Haroun-al-Raschid, applied to the emperor of Constantinople for the best Greek works, to be translated into Arabic and read in the Arab colleges of Cufa, of Basra, of Cairo, Fez, Maroc, Tûnis, Tripoli, and others.” (p. 147.)

Indeed, the Saracens and the Moors, like the Persians, not only copied Grecian art, but employed Grecian artists. In the same way that the Emperor Justinian invited a Persian architect to Byzantium, Abderahman, king of Cordova, called a builder from Byzantium to Spain; and, in fact, wherever

the Saracens successfully established their dominion, every edifice for use and for elegance, the medrassé, the mosque, and the mausoleum, the palace and the pavilion, bespeak, in their fundamental features, the imitation of the two nations to whom they chiefly owe their later culture — of the Greeks and the Persians.

“That other swarm, completely barbarous in its native hive — that branch of the great Tartar race called the Moguls, who, later again, overran Persia and made Constantinople tremble — no sooner had established its empire in India, and begun to cultivate the arts of peace, than it also seems, through Persia, to have derived its artists and its models from the common source which supplied all the regions of Islamism. Seeming to hold in contempt or abhorrence the heavy indestructible pagoda of the idolatrous native, the Mogul princes of India, instead of the patterns immediately under their eyes, imitated in their mosques and mausolea the airy arches and the lofty cupolas of the Persians and the Greeks.

“Thus, on the wings of Mohammed's spreading creed, wafted from land to land by the boundless conquests of his followers, the architecture of Constantinople, extending one way to the farthest extremities of India, and the other to the utmost outskirts of Spain, prevailed throughout the whole of the regions intervening between the Ganges and the Guadalquivir: in every one of the different tracks into which it was imported still equally different from that of the aborigines or early possessors; — in Asia Minor, from that of the ancient Sardis and Ephesus; in Egypt, from that of Thebes and Memphis; in Persia, from that of Istakhar and Naksî Rustem; in India, from that of Gnatio and Benares; and in Spain, from that of Saguntum, by the side of which it rose; and in each, still resembling its own more remote ramifications in every other country enumerated, or its common stock in the mother soil. Thus, while in none of the various and distant countries here named, we observe, previous to the adoption of Islamism, the slightest approach to those inventions, the pride and the stay of architecture — the arch and the cupola; in all of them alike, on the very first settling in them of the Mohammedans, we see these noble features immediately appearing, from the application of Greek skill, in the full maturity of form they had attained among themselves.” (p. 148.—150.)

Chap. XIV. *Derivation of Russian Architecture from that of Byzantium.*

“To spread like rays of light on every side, it only remained for the Constantinopolitan architecture to penetrate the Sarmatian tribes, which on the north-east of the Byzantine empire reach almost from the Black Sea to the White: and among these, also, it soon made its way. The Czars, or Cesars, of Russia, who styled themselves the representatives of the emperors of Constantinople, who derived from the Greeks of Byzantium their literal characters and their creed, also took from them their architecture.” (p. 152.)

“When from Novgorod the seat of the empire was, by Ivan, transferred to Moscow, that city received at the hands of its prince a new cathedral, which has since again been demolished: he also constructed a citadel, called Kremlin, and a lesser church, in remembrance of the transfiguration, which still subsists. Of these, as of all the other churches erected in Russia while the Grecian empire lasted, the architects were Greeks. When the fall of Constantinople caused Italians or natives to be employed, the original style of the country continued so far to influence their designs, as still to make these present the Greek exterior, in the façade, adorned with enamelled tiles; and the Greek distribution in the cross, with four equal ends, crowned by a large central, and four smaller surrounding cupolas, of bulbous form, from between which shot forth steeples, shaped like the minarets of Cairo, of Isaphan, and of Delhi: and as the cathedral of every Russian city resembles the Mohammedan mosque, so the Gostinói Dvor — the square market-place — of every city,

with its double range of arcades, resembles every Eastern caravanserai or khan, and marks, like the former, the relationship borne by the Russian architecture to the Arab, the Persian, and the Moorish, and its common filiation with these from that of Constantinople — whose ramifications, extending alike to the north of Europe and the south of Asia, the Indian and the Atlantic Ocean, enable one, in the market-place of Novgorod, to fancy oneself in the Meidoun of Ispahan; in the cathedral of Kieff, to acknowledge relationship with the mosque of Cairo; and in the Kremlin of Moscow, to recognise the minarets of Agra and of Delhi." (p. 156—158.)

(To be continued.)

ART. II. *The improved Builder's Price Book, containing upwards of Eight Thousand Prices, founded upon actual Calculations, carefully digested and corrected from the present Price of Materials and Labour; also the Workman's Prices for Labour only; the most preferable Mode of Measuring pointed out; and upwards of Two Thousand useful and important Memorandums and Tables; together with Extracts from the Building, Paving, and Chimney-Sweepers' Acts, and Tables for purchasing Leases, Estates, or Annuities.* By W. Laxton, Surveyor. Tenth edition, with considerable Additions and Alterations. 8vo. London, 1836. 4s.

WE are glad to see another edition of this excellent work; generally, we believe, allowed to be decidedly the best of the different London Builder's Price Books.

ART. III. *Plans, Elevations, Sections, Details, and Views of the Cathedral of Glasgow.* By J. Collie, Architect. Part I. consisting of five lithographic plates. Extra fol. London, 1835.

THIS will be a valuable work, more especially if Mr. Collie gives the details and the ornaments, many of the latter being curious, and some of them very original; at least if our recollection of this sublime fabric does not deceive us. We cannot better recommend the publication than in the words of Mr. Collie's prospectus:—

"When it is considered that the cathedral at Glasgow is the only ecclesiastical building in Scotland, of any extent, which escaped the ruin in which the monastic establishments throughout that country were involved at the period of the reformation, its propriety and fitness as an object of illustration will be sufficiently obvious, independent of the fact, that this cathedral is one of the finest examples of early English Gothic architecture now extant. Although Glasgow Cathedral possesses architectural beauties of the very highest order, and although her crypts are by far the most unique and magnificent in the kingdom, and have been invested with such romantic interest by the great master-spirit of the age, yet these beauties are comparatively unknown, no successful attempt having been made towards their delineation—a circumstance the more remarkable, seeing that the cathedrals throughout England have been so fully and splendidly illustrated. From these considerations, and the recent appearance of Mr. McLellan's admirable

history of the cathedral, as well as the interest which has been excited by that gentleman's zealous exertions in furtherance of the restoration of this structure, and the completion of its original design, the author has been led to attempt the publication of the work now contemplated, convinced, that, if delineated and got up in a manner worthy of the subject, it will recommend itself to an enlightened public. The object of the work will be, to furnish, along with a short descriptive letter-press, a series of correct and elegant lithographic drawings, consisting of plans, sections, elevations, and details, both of the mouldings and foliage; together with perspective views of the fabric, from different points of the interior and exterior, all of which will be comprised in between 30 and 40 plates; two of which, the south elevation and the longitudinal section, will be upwards of 4 ft. in length."

ART. IV. *Literary Notices.*

DOMESTIC Architecture is preparing for publication by Mr. Williams. The author is P. F. Robinson, Architect, F. S. A. and F. G. S., Vice-President of the Institute of British Architects, author of the new *Vitruvius Britannicus*, and other works. *Domestic Architecture* will appear in parts, and will illustrate various buildings designed and executed by Mr. Robinson.

La Alhambra is preparing for publication, and will consist of a selection of plans, elevations, sections, and details of this splendid specimen of Moorish architecture, so unexampled for the purity of its ornaments and richness of its colouring, from drawings, taken during a residence of several months in the Alhambra, by M. Julie Goury (deceased), and Owen Jones, architects, drawn on stone by Owen Jones, and artists under his direction, accurately printed in colours.

The Continuation of Pugin's Works on the Architecture of the Middle Ages, by Thomas Larkins Walker, architect, will be published in parts; the first appearing in June, 1836.

MISCELLANEOUS INTELLIGENCE.

ART. I. *Domestic Notices.*

ENGLAND.

THE Institute of British Architects held a meeting on Monday the 5th inst., S. P. Papworth, Esq., V.P., in the chair. Amongst the presents announced as received, were two medals in gold, and one in bronze, from the Royal Academy at Berlin; and a copy of the works of M. Hansteen, the celebrated Danish architect, with a medal from the Royal Academy at Copenhagen. There were also on the tables 120 specimens of the different kinds of marble used in the buildings of ancient Rome, presented by T. L. Donaldson, Esq., with the capital of a triumphal arch from the same city; a marble bas-relief, being a fine specimen of the art of monumental sculpture; a manuscript copy of Sir John Soane's *Lectures*, and several medals and casts. Mr. Robinson, one of the vice-presidents, read part of an *Essay on Concrete*, which had been forwarded in consequence of the offer of a premium, and to which the council had awarded the prize, subject to the approbation of the members; and Mr. Fowler also read a series of communications from Messrs. Smith, extensive builders in Scotland, in answer to the queries issued by the Society. By these gentlemen the first chain-foot suspension bridge was erected, in 1817, over the Tweed in Roxburghshire, the span being 261 ft., at an expense of 560*l*. Prior to this, a wire-bridge had been erected in Selkirkshire, of 100 ft. span, at an expense of 25*l*. The secretary reported that the balance in the

treasurer's hands now amounted to 172*l.*, in addition to the funded property of 1,00*l.*; and that a donation of 10*l.* had been received from Mr. Leventon, in aid of the foundation for travelling students. An eminent architect from Munich was present, and was elected a corresponding member. — *M. C.* Jan. 6. 1836.

Kent. — *Herne Bay New Chapel.* — A new chapel of ease, in the pointed style of architecture, has recently been completed at Herne Bay; the front and sides are in imitation stone, and the back front is in brick. The only novelty displayed in this erection is in the front; over the principal entrance is a niche, containing the figure of our Saviour bearing the cross; the figure is in cement, and the cross wood. — *Tyro. Wilmington Square.*

Somersetshire. — *Clifton Suspension Bridge.* — It has, at length, been determined by the trustees of the proposed suspension bridge across the Severn, at Clifton, to proceed with the undertaking. The design to be adopted is that of Mr. Brunel, with some new suggestions. — *Id.*

ART. II. Retrospective Criticism.

CENSOR'S Answer to Mr. Perkins. (p. 42.) — The observations of Censor on the warm-water apparatus of Mr. A. M. Perkins, appears to me to make part of those numerous misstatements, which, either through ignorance or through intention, have so often been put forward by those who have written on the subject; and I am surprised that Censor, having, as he thinks, proved "that Mr. Perkins knows extremely little about the principle upon which his system is founded," should imagine his ingeniously contrived observations will remain unanswered, because he "is completely sick of the subject."

All persons connected with buildings are well aware that a warming apparatus in our public buildings, and in the houses of our nobility and gentry, is in very great request: but the public may not generally know that the providing of them is a business of very great extent, and that it is in the hands of a few monopolists, who are interested in making every exertion to put a stop to any ingenious contrivance, that is capable of producing, at half the expense of any of their own costly apparatus, greater and more certain effects, and upon better and more simple principles. I have always paid considerable attention to this subject, and, during the time I have been in the profession as an architect, I have had opportunities of witnessing the effect, in some of our largest public buildings, of the numerous contrivances introduced for warming them, on the various principles of steam, the circulation of hot water, and the pernicious one of heated air. I will say nothing of the latter system, and merely observe that the excellent, though costly, steam apparatus for warming buildings is now little used; principally, through the constant failures of those put up by unprincipled persons upon cheap terms. The warm-water apparatus has now deservedly become the favourite mode of warming buildings, and it is introduced extensively both in our public and private works. I have seen several of them applied in different buildings. The first I had an opportunity of witnessing consisted of a collection of hollow iron tablets of about 3 ft. 6 in. square, and 3 in. thick, placed upright, and connected together at top by a pipe conveying the hot water from the boiler into them; and at the bottom, by a similar pipe conducting the water back to the boiler to be reheated: as this apparatus, suited only for the interior of a great room, was placed in a situation it certainly was not fitted for, it proved a failure, was taken away, and replaced by Mr. Perkins's system of inch tubes, which was better adapted (as it has been since sufficiently proved) to the situation. It has been a favourite aim with most of the inventors of these systems, to have as much warm surface in their different contrivances as possible: in some, large flat tubes of 1 ft. high by 2½ ft. thick, have been used for the circulation of the hot water. I have seen some

of this kind in use with leakage at every joint; which, but for the use of basins and pails, would have flooded the floor of every apartment in which they were placed. Censor would wish us to believe that the 4-in. tube of the old system gives out a greater quantity of heat than the 1-in. tube of Mr. Perkins. The small quantity of water in the latter apparatus, circulating very rapidly, keeps the pipes at a very high temperature; while the large quantity of water contained in the boiler, and in the tablets of the former, together with the diameter of the pipe itself, prevents the water from ever reaching the boiling point, or being carried with good effect to any great distance. With regard to Censor's remarks on the effects of the bends and turns of the pipes, they merely illustrate some of the difficulties attendant on the "ordinary open apparatus with tubes of 4-in. diameter;" and they have little or no application to Mr. Perkins's system; the apparatus of 4-in. tubes being incapable of forming an ascending column of any great height, and the circulation being principally horizontal. In Mr. Perkins's apparatus, at least in all those that I have had an opportunity of inspecting, the tube containing the ascending column of warm water proceeds directly from the furnace, without, if possible, a single turn or bend, to the highest point of the house to which the warm water has to circulate, and where the expansion tube is generally placed; thence it descends through the numerous coils placed in the different apartments, the tube having then, very probably, from 50 to 100 bends, twists, and turns, at right angles in them." That this is the arrangement of pipes in Mr. Perkins's apparatus is open to any person's conviction. At the British Museum, the print room and the bird room are warmed by two pedestals containing Mr. Perkins's pipes. The furnace is 50 ft. below the floor of these rooms; and the tube containing the ascending column of warm water rises perpendicularly, without a single "bend or twist," to the highest part of the pedestal; it then descends through the coils to the furnace. The different systems of warm-water circulation are more or less suited to particular situations, and I am not going to pass a sweeping censure on all but the one I most approve. I am perfectly aware that the system of 4-in. pipes has its advantages. Mr. Sass of Charlotte Street, Bloomsbury, has one in his study and adjoining apartments, with which he is perfectly satisfied. The room in which I am now writing is warmed by one of Mr. Perkins's systems; it has been in action three years, and to say it merely pleases me is insufficient; my warmest praises could not repay Mr. Perkins for the comfort I have experienced for the last few weeks alone in my office, and in every part of the house where his pipes are present. To-day, the 4th of January, the weather is mild, the temperature in the open air is 48°; the fire in the furnace has been kept low, yet the thermometer opposite to me indicates 66°, and I am removed 30 ft. from the furnace, both in length and height. During the last few cold weeks the temperature of the same room was near 60° at 9 o'clock in the morning. There has been no leakage from any "defective joint or joints" since the apparatus was left by Mr. Perkins, a few weeks after it was first introduced; indeed, it is difficult to imagine how one can take place, the joints being formed by a right and left hand screw within a nut, and screwed so tight that one pipe makes an indent in the other. I am not alone in my approval of Mr. Perkins's system: the profession generally are in favour of it; and Sir John Soane, who is not a person to give his judgment hastily on any subject, has introduced it in his museum; and, when a written application was made lately to him, enquiring as to its success, I am informed that he declared in answer, that, among the numerous contrivances for warming that had been introduced in his museum, the present was the most successful, and had given him the most satisfaction. Sir Robert Smirke has likewise applied it to his office, and I believe in some of his large public buildings. In a valuable work lately published, some quotations from which appeared in the *Architectural Magazine*, and which your recommendation, accompanying the quotations, induced me to procure, Dr. Coombe's *Principles of Physiology* (see vol. ii. p. 460.), I found nearly three pages devoted to the description and recommendation of Mr. Perkins's

apparatus, and I have since learnt that several gentlemen of the medical profession have given similar opinions in its favour.

There is one remark made by Censor which, at least, I did not expect from him; it is, the danger which would ensue, if the water within the pipes of Mr. Perkins's apparatus should freeze in cold weather, &c., &c. That water will freeze in pipes in cold frosty weather is sufficiently well known; the simplest housekeeper in London protects the water pipes in his area under such circumstances. In the depth of winter, when the warm-water apparatus is more particularly in use, the fire in the furnace ought to be made up late at night, and renewed early in the morning, and never suffered to be wholly extinguished: if it should so happen that the apparatus for a few days is not required to be used, a cock placed in the lowest line of pipe will draw the small quantity of water off in a few minutes. I will not allow, supposing a 1-in. pipe should burst from such a cause, that the damage is "more costly to repair" than if the same happened to a 4-in. tube, or an enclosed tablet belonging to any other system; and they are all equally exposed to the same neglect.

I will only add that, whatever Censor's opinion of Mr. Perkins's apparatus may be, its inventor deserves the thanks and patronage of the community, for an apparatus for warming buildings, so admirable in its effect, so easy of introduction, and at the same time, from its moderate cost, so completely within the reach of every moderate income. Let Censor praise the ordinary systems in use as he may, he cannot add to any of them the latter recommendation. — *An Architect. London, January 4. 1836.*

Candidus on Scrutator's Remarks. (p. 47.)—What meaning Scrutator attaches to the expression "bandbox remarks," I do not exactly know; however, as that mysterious epithet is coupled with the sufficiently intelligible one "superficial," let its precise meaning be what it may, it is, obviously, the reverse of complimentary. Neither can I feel particularly flattered by Scrutator saying that I am precisely the sort of person he should call an *artist*, that title being, according to his vocabulary, no better than one of reproach,—at least in architecture; so that my chief consolation is, to learn from him that it applies equally to four fifths of those who style themselves architects. Still, after all, he has now rather increased than solved the difficulty, evading a direct reply to the point in question, which is, how one "who does not properly understand his profession" can, on that account, be entitled to be designated "an artist," by way of distinction from those who do? This is the enigma which Scrutator should have unriddled; or will he go as far as to maintain that architecture is *not* an art, and that those who are most accomplished in it are *no artists*? Be his opinions what they may, his expressions certainly imply this; else the distinction he makes is a most extraordinary one, as it confers the more honourable epithet on those whom he considers the least worthy; which is very much as if we should say that those who are only clever versifiers ought to be termed, *par excellence*, poets. Now, to convince Scrutator that, all bandbox as my opinions may be, I am far from being offended with him, I will goodnaturedly assist to help him out of the quagmire of dilemma into which he incautiously has plunged himself, remarking that what he should have said, and what I will presume he intended to say, was that, for want of practical education, such persons as he calls mere artists can only be called architectural draughtsmen; or, had it so pleased him, he might have added, smatterers and empirics in architecture,—persons, in short, who understand little more of the art than what relates to making drawings. Yet it can hardly be denied, that a man may possess very great ability in architectural drawing, without manifesting any talent whatever in architectural *design*, either as to general composition or to detail; whereas Scrutator's words would rather imply that the numerous class he alludes to excel in design, although they are utterly incompetent in other respects. For this reason was it, that I termed his doctrine an extraordinary one, and, unless he choose to explain himself, such I must still consider it to be.

I have again some difficulty in fancying him quite serious, when he states that, of those who actually profess architecture, not one in five properly understands his profession; because, according to him, the not understanding it arises from the want of practical education, which the greater number at least, it is to be presumed, must have received. Does he then really mean to assert that a very large majority of the profession have not been trained up to it? For, if we are not so to understand him, but that by a "practical education" he means much more than a "professional" one, although we may so far admit his doctrine to be correct, it is not easy to devise any remedy for the evils of which he complains: things must be left to take their course; and all that remains to be done is, for those who employ architects, to ascertain beforehand, if possible, how far they are really qualified to act as such.

Scrutator considers me "superficial"; now I really cannot return the compliment, for his meanings lie so very far below the surface, that it is next to impossible to come at them, or even to guess at what they really are. Instead of styling him superficial, I give him credit for being exceedingly profound. But I do not think it is exactly fair in him to give as a quotation what I never penned; and, if he will read over again my remarks at page 469. (Vol. II.), he will there find no such expression as what he has placed between inverted commas, viz. "the practical part of the professional qualities of an architect might be divided from the art of design." Admitting that this does not vary materially from the substance of my remarks, it seems to colour them somewhat differently, since my observation was to the effect that it might frequently be better, were two architects to be associated in the same work, and mutually to give each other the assistance of their respective talents.

This Scrutator considers a preposterous idea, not better than "nonsense," and proceeds to prove it so by an illustration, which is so *mal-à-propos*, that it supports my argument much better than his own, and I, therefore, ought to feel grateful to him for supplying me with it. Is there not in the medical profession exactly that kind of cooperation between the surgical practitioner and the physician, which I ventured to suggest for architecture. Does the physician undertake to operate on a patient by cutting off a limb? Again, is he not called in after a patient has been prescribed to by an apothecary? Why should not the same individual be perfectly competent to act in both capacities, or wherefore should the practical part of surgery be divided from the art of prescribing? Nay, are there not those who confine themselves exclusively to a single particular branch of practice; for instance, accoucheurs, dentists, aurists, and oculists; and, as to the system of cooperation, to such extent is it carried in the medical profession, that, instead of one doctor and apothecary being thought sufficient for a single patient, it is frequently deemed expedient to have the attendance and consultation of two or three doctors at the same time: which, according to Scrutator's doctrine, must be a truly terrible business indeed; for what else can they all be but bunglers, who do "not properly understand their profession," or else what need of so many?

In saying that to one architect might be confided all that relates to the general scheme and artistical effect, I did not thereby intend to assert that he was to be utterly ignorant of construction, and of the *anatomy* of a building, and to design, without considering how the edifice was to be put together; but no more than that, like the physician, he might leave his professional colleague to operate properly in his peculiar department, and to take care that no inconvenience should ensue from the inexperience of the other in purely practical details.

And now, the only ill wish I have to express for Scrutator is, that he will have no occasion to summon any of the medical profession to his aid again, but be able to keep himself out of their clutches all the rest of his days. — *Candidus*.

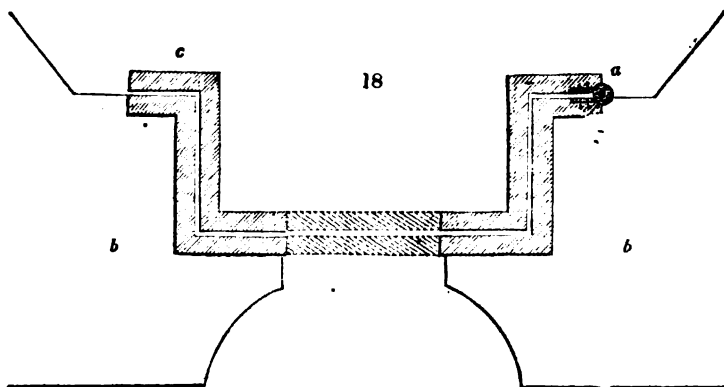
Mr. Hakewill's Pamphlet on Elizabethan Architecture. (Vol. II. p. 369.) — In your review of this work, you mention that Mr. Hakewill offers a few remarks on the rebuilding of the Houses of Parliament, in which he proposes

that only architects eminent in their profession should be allowed to compete. Now, if our architects had gained their eminence by ability alone, unaided but by their own exertions, I should consider that there would not be any objection to this mode of limiting the competing candidates; then again, if these eminent architects possess real merits, surely there cannot be anything to fear from young architects, architectural draughtsmen, or others, whose names are unknown in the architectural world. In my opinion, an open and fairly conducted competition would be the only means of trying the talent of the country; and to insure a fair decision, let professional men be employed as judges, which will be a sure means of preventing favouritism; there being too much jealousy in the profession to allow of anything of the kind. — *Tyro.*
Wilmington Square.

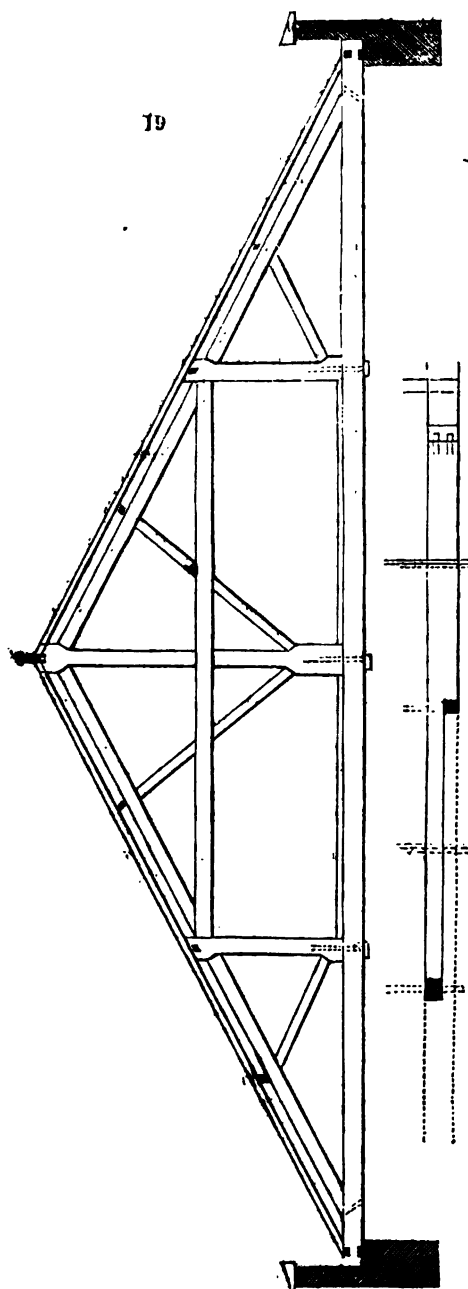
Gin Temples of the Metropolis. (Vol. I. p. 166.) — Your remarks on these edifices have been verified. Other tradesmen have ornamented, and are ornamenting, their houses, and, generally speaking, with a better taste than that displayed in the temples, in which not much improvement has taken place. You may still see, in all parts of the metropolis, large pilasters standing over entrances, and, in some instances, where there are two entrances with a window in the centre, you may observe a large pilaster hanging over each entrance, and one over the window opening; and, in others, pilasters 6 in. in width on the ground story, supporting pilasters of not less than 14 in. in width in the one-pair story. This is, indeed, reversing the business, instead of the strong being made to carry the weak, it is completely *vice versa*.

Examples of the last-mentioned error are often to be seen in tradesmen's shops; another error, and a very common one, is introducing windows with architrave mouldings, &c., and between the stories ornamented cornices, &c., and then crowning the composition with common coping. — *Id.*

Waterproof Casement. — In the *Arch. Mag.* for March last (Vol. II. p. 133.), Mr. Saul gives us what he calls "a waterproof casement." It would, perhaps, be well if contributors would first consider whether their communications or suggestions were really practicable or not, before forwarding them to you for publication. Mr. Saul will, perhaps, clear up the difficulty I am in regarding his waterproof casement. If I am not in error, he intends the outside frame to be fixed permanently in the stonework, and, from the engraving, we may fairly imagine it to be glazed: by the way, there is no mention made whether or no any provision is made for ventilation. By showing a hinge as at *a* (fig. 18.), I am led to believe that he intends the



inside frame to open. Now, if he places the point of one leg of his dividers in the centre of the hinge at *a*, and extends the point of the other leg diagonally across to the opposite internal angle, he will find, by describing an arc from



the centre (*a*), that the diagonal from *a* to the opposite internal angle is longer, by, perhaps, three inches, than the distance from *a* to *c*; consequently, the inner frame is locked up, and the casement may be, for aught I know, both watertight and airtight too. — *Augustine.*

C. B. W.'s original Design for a Roof (Vol. II. p. 537.) is a combination of what are technically called the king-post and queen-post trusses; but it is not, I think, the best that could be adopted; as in it, it appears that the centre, or king-post, truss derives the whole of its support from the side, or queen-post, trusses. Now, should the queen-post trusses, by any mishap, fail in their destined purpose, the king's would soon be humbled in the dust. The combination of the above-mentioned kinds of trusses, in a one-span roof, occurred to me some few years ago, and was submitted, by me, in a design for the roof of a new church at that time proposed to be erected in this town. I have sent you a sketch of it (*fig. 19.*), which, I think, will show a great saving in the weight, and, consequently, cost, of materials; at the same time that it forms the two trusses in the most perfect manner, and, in the event of one giving way, it can, in no way, affect or destroy the other. I presume I need not describe the separate timbers, as they are so commonly understood. — *Wm. Coles. Winchester, Dec. 7. 1835.*

ART. III. *Queries and Answers.*

SUSPENSION Bridge near Wakefield.—One half of the above bridge suddenly gave way on the 2d inst., with a tremendous crash, in consequence of the breaking of one of the supporting chains. This is the second bridge of this kind which has fallen lately; and I quite agree with your correspondent W. (Vol. II. p. 476.), that some information, as to the cause of such failures, would be highly interesting and useful. — *S. H. P. London, Jan. 11. 1836.*

Park Spring Stone.—Can you, or any of your readers, give me any description of this stone? — *G. B. W.*

A Painting-Room.—I am desirous of building a large room in my back garden, which I intend (being an artist) to use as a painting-room; and, as I have only a lease of ten years of the premises, I am desirous of doing it at the least possible expense, consistent with security from thieves and fire, with the exclusion of heat in summer, and cold in winter. I find, on enquiry, that the cheapest mode is to form a foundation for the walls of brick piers; on these, to lay sills, or joists, and upon these to raise a wooden framework; or, rather, two frames of wood, each filled in with studwork, leaving a vacuity of about a foot between them. The outside frame is proposed to be plastered over with cement, and coloured in imitation of stone; and the inside frame to be plastered in the common manner. As I intend the walls only to be 15 ft. high, this double frame will, it is thought, form a sufficient support for the roof; the floor can be made in the usual manner. Now, what I am in difficulty about is: first, whether such a structure will last during ten years; second, whether, if it lasts that time, I shall be obliged to leave it in repair to the ground landlord, that landlord being a public corporation; and third, whether such a building, and the property in it, can be insured at the ordinary rate. I should also wish to ask the professional readers of the *Architectural Magazine*, whether they can inform me of any cheaper mode of erecting a room 40 ft. long, 20 ft. wide, and 15 ft. high. — *An Artist. London, Jan. 1836.*

In Mr. Hakewill's pamphlet *On Elizabethan Architecture* there occurs the following mistake: in one part (p. 11.), Mr. Hakewill says that the House of John of Padua is the oldest example of Elizabethan architecture, in England, and that it was built in the year 1579; and, in plate 1. illustration 2., is given an elevation of the House of John of Padua, erected in 1567. Now, I should be much obliged to any of your readers who could inform me the real year in which the house was built? — *T.*

Grecian and Italian Tiles.—In your *Encyc. of Cott. Arch.*, p. 25., are two figures (figs. 23. and 24.) of some Grecian and Italian tiles; and, in p. 88. of the same work, there are two others (figs. 163. and 164.). All these specimens are very handsome, but I have my doubts as to their efficacy in keeping out the wet. Have they been tried, and where? And have they answered the most important use of tiling; viz. keeping the roof dry? — *J. H. Bristol, November, 1835.*

Fastenings for preventing Windows from shaking during high Winds.—There are few persons living in modern-built houses of the ordinary description, who have not been annoyed by the shaking of the windows during high winds. The only effectual remedy I know is to have the window frames made of well-seasoned timber; because it is the shrinking of the sash which gives it room to play backwards and forwards in the groove in which it runs: but surely there must be some palliative for this evil better than the ordinary one of using wedges. Are there no brass fastenings which might at once fix the two sashes to each other, and to the grooves in which they run? If there are, I shall be very much obliged if you, or any of your readers, can point out where I can purchase them; and, if there are not, I am sure it would pay a Birmingham manufacturer to get up such an article, and the ironmongers here to expose them for sale. — *A. W. S. Highgate, Jan., 1836.*

THE ARCHITECTURAL MAGAZINE.

MARCH, 1836.

ORIGINAL COMMUNICATIONS.

ART. I. *A Proposal for publishing the unsuccessful Designs for the Houses of Parliament.* By Mr. WEALE. With a Postscript by the Conductor, recommending the Publication of those Designs also for which Premiums were awarded.

BEING much interested and most anxious for the promotion of architecture in this country, I ventured to obtrude the following ideas and suggestions at the meeting of the candidates for the parliamentary edifices, which took place at the Thatched House Tavern, St. James's Street, on February 4. A strong desire has been expressed that the public should be afforded the means of judging of the respective merits of the designs for rebuilding the Houses of Parliament; and confident expectation has been entertained that steps would be taken to gratify so laudable a curiosity: a feeling, which not only betokens the interest at present taken in architecture generally, but also a laudable anxiety that so important a national structure should prove to after generations a worthy monument of our national taste, and of the architectural talent of the present age.

Such being the case, the public mind may be said to be in favour of any scheme by which it may be enabled to learn, not only how far the choice which has actually been made is discreet and impartial, but also what is the aggregate talent that has been put forth on this occasion. For this purpose, it has been suggested that there should be a public exhibition of all the drawings; but, whether that plan be adopted or not, it is no less desirable that they should be engraved and published collectively in a folio volume.

Among the numerous reasons that might be adduced in favour of undertaking such a work, it is not the least, that, although an exhibition of the original drawings might be the more popular mode of the two, the embodying all in a work would be the more permanent mode of recording them, and, also, that it would be one by which they could be diffused through all parts of the country, and, in all probability, extended to many places abroad.

Such a work would become a lasting memorial of the varied talent and taste manifested in the designs; and, while all the competitors would have the satisfaction of finding that their anxious study had not been thrown away upon a merely temporary purpose, there is hardly one, perhaps, who might not be more or less benefited by his name, together with a specimen of his ability, being thus brought before the public. Even in those designs which may be inferior to the generality, or which else may, for some particular reason, have been deemed ineligible, there may, nevertheless, be very much to commend, and sufficient proof of both skill and taste. Hardly, indeed, is it to be supposed that public opinion will be perfectly unanimous in such matters; or, that each critic will bestow his preference so exclusively on any favourite design, as to be able to perceive no merit in the rest.

Independently of these views, there is another highly important consideration recommending what is above proposed; which is, that an opportunity, which, if passed over, may not again occur, now presents itself of enlisting general attention to that one of the fine arts, in regard to which, with the exception of the profession itself, and a very limited circle beyond it, apathy and indifference, with their consequent ignorance, may be said to predominate.

Here is an occasion where some interest for it would be pretty generally affected, if not felt; at the same time, the work itself would be of that nature as almost unavoidably to stimulate to more than superficial inspection; because, all the designs being for the same purpose, and accommodated to one site, hardly any one could help attempting to make some kind of comparison between them; and such an attempt would, of course, lead to such a careful examination of the designs, as would, probably, in many instances and in many minds, awaken a relish for the subject, and a favourable disposition towards it.

It is but policy to profit by adventitious circumstances, and turn them to the greatest possible account; whereas, should nothing further be done, it would argue something like indifference, on the part of the competitors, as to fame and the opinion of the public; at least, their reluctance to be at any further trouble, now that the decision has put an end to what was first the principal object of each individual, namely, the hope of pecuniary reward: the stir originally made respecting the competition would entirely die away, and all the reputation would be borne off by the architects whose designs have been selected.

In addition to the above arguments, it may be urged, that the publication of the designs in question might become a precedent for other occasions, whenever there should be a competition for any building of extraordinary importance; and it might so far operate very beneficially, by rendering those with whom the de-

cisions rest in some degree responsible for their choice, and amenable to public opinion.

Although the proposed volume would be a work of some magnitude, it might be brought out very expeditiously, would each architect, who should consent to have his design inserted in it, copy his own drawings on stone; so that the engraving would be executed simultaneously, and all completed within the time requisite for finishing a single set. Beyond the labour so bestowed, there would be no further risk on the part of the respective architects, as I would engage to furnish them with the lithographic stones, and to defray all the other expenses of the work, requiring only to be reimbursed out of the proceeds, and to receive the small commission of 5 per cent. for my own trouble, leaving whatever further it might produce to be shared by the authors of the designs. For, although I think so well of the scheme that I should be greatly disappointed were it not to realise something handsome, I am willing to forego profit in it as a speculation, by way of holding out all the encouragement that is in my power. At the same time, I do not profess to be altogether disinterested; because, for some of the reasons above assigned, I conceive that I should then be promoting an object likely to be very influential upon architecture, and its estimation in public opinion; and so far indirectly promoting that particular branch of the publishing trade which is connected with architecture, and to which I have exclusively devoted myself.

Should these considerations be entertained, I would propose that a publishing committee should be formed for the purpose of superintending the arrangement and the details of publication; and that each individual joining the undertaking should be required to subscribe to certain conditions, so as to insure the fulfilment of the suggestions here made.

JOHN WEALE.

Architectural Library, High Holborn, Feb. 10, 1836.

For the important reasons so clearly and forcibly assigned by Mr. Weale, we think that not only the designs which have been unsuccessful, but those also to which the premiums have been awarded, should be published. The British public is just beginning to exercise an opinion on matters of taste in arts and manufactures, and such a publication as that proposed would give a wonderful stimulus to architecture. All the public libraries throughout Europe and North America would be eager to possess a copy of the work; and we have no doubt that, in consequence of the recommendations of the Committee on the Fine Arts of the House of Commons, government would purchase a number of copies, and present them to Mechanics' Institutions, and other institutions to be formed in large towns, for the purpose of

encouraging art. A more liberal proposal than that made by Mr. Weale could not be made, and we have not a doubt but that it will be duly appreciated both by architects and the public. —
Cond.

ART. II. *A new Site for the Houses of Parliament suggested, and the fundamental Principles on which they ought to be designed pointed out.* By the CONDUCTOR.

WE are glad to observe that the subject of the site for the proposed New Houses of Parliament has been brought before the members of that body by Mr. Hume. It has always appeared to us that the architects who were invited to send in designs should not only have been left to choose the style of architecture of the building, but also to suggest the site on which their designs might be most advantageously carried into execution. It will not be denied, we think, that, if the present Houses of Parliament had not existed where they do, no one would ever have thought, at the present day, of building them there. The situation is not only at one extremity of the metropolis, but it is so isolated as to be conveniently approachable only on one side; and, added to this, it is low, moist, and unhealthy.

When so important a public building as a senate house is about to be erected, the situation relatively to the other buildings of the metropolis, instead of being passed over as a matter requiring no consideration, ought, in our opinion, to be the first and most important point to which those invited to send designs ought to direct their attention; the second point ought to be the design of the building itself; and the third, the susceptibility of the site and the design for being connected with such other government buildings, either already existing, or to be built, as it might be found desirable to place near the legislative chambers. In short, in fixing on the site for so important a public building as the place of meeting for the grand legislative assembly of the country, the architect ought, in the choice of a situation, to be guided by fundamental principles of utility and arrangement rather than by precedent, prejudice, or accidental circumstances.

In order to give a slight general idea of the sort of view which we take of the subject, we shall suppose Leicester Square to be a suitable situation for the site of the new Houses of Parliament; and that it were practicable to clear away the houses in every direction, as far as the Haymarket, Gerard Street, St. Martin's Lane, and the National Gallery, on the north side of Trafalgar Square. This clearance would become requisite, not only to admit all the necessary appendages, but to provide the public

with an open space, equivalent to that of, which they would be deprived by the loss of the present area of Leicester Square.

These preliminaries agreed on, we would commence, in the centre of the space so cleared, with a quadrangle of sufficient size for containing the Houses of Parliament, and the offices strictly connected with them. This quadrangle we would enclose by another, say at 50 or 60 ft. distance from it, in which we would place all those government offices connected with the civil service which it was desirable should be as near the House of Commons as possible; such, for example, as the Treasury, the Foreign Office, the Office of Public Works, &c. This second quadrangle we would surround by a third, in which might be contained the Courts of Law, and all the offices connected with the government taxes. These three concentric quadrangles (or they might be made concentric circles, or polygons, if such were thought preferable) would, we should suppose, afford every kind of accommodation requisite for the completion of the general idea which we have thrown out; and, if it were not deemed necessary to carry the whole design into execution at once, the central quadrangle, containing the Houses of Parliament and their offices, might be built, and the rest deferred; which would render unnecessary the clearing away of so many houses at one time.

In carrying such a design into execution, the following points should be attended to:—1. The diagonal line of the quadrangles ought to be in the direction of north and south, in order that the sun might not be too powerful on the windows on any one front, and in order that it might shine on every front, and more especially on every opening between the quadrangles, every day in the year; thus distributing light and heat with comparative equality, and drying up the damps every where. 2. The quadrangles ought to be intersected by several carriage-ways, in direct lines at right angles, from the central quadrangle to the extremities, terminating in grand archways, for the entrance and exit of carriages to every part of the buildings. 3. The quadrangles ought also to be intersected on the first, second, and third floors with passages crossing the open spaces and carriage-ways beneath, on covered suspension bridges; so that, from the Houses of Parliament in the centre, there might be direct communication by carriage-ways on the ground floor, and by passages on the first, second, and third floors, and also underground, to all the different exterior quadrangles. This would in effect render the whole one building, and would greatly facilitate the despatch of public business. 4. The lines of communication, in the separate ranges of building composing the quadrangles, should, in general, not be in exterior galleries, but through central passages, lighted from the roof. Exterior galleries, arcades, or colonnades, though imposing in an architectural point of view, are yet

very unsuitable to the thick atmosphere of London; as they tend greatly to darken the windows of the building they are attached to, and, consequently, must be very injurious in the case of rooms chiefly occupied by persons reading or writing. 5. All the buildings should be made fire-proof; and also, as far as practicable, all the furniture. For this purpose, slabs of slate might be used in panels, shelves, flaps, &c., and iron or copper in the styles, rails, mullions, &c.; and thus the use of wood might be almost dispensed with. 6. The whole might, to a certain extent, be lighted by gas lamps, placed close to the outside of the windows; and heated by steam from one or more boilers; but not to the exclusion of candles or lamps, or open fire-places, without which last, in all ordinary rooms, it is difficult to insure adequate ventilation. 7. Water should be conveyed to cisterns at short distances all over the roof, and supplied from them to every apartment by leaden pipes, which, in case of fire, would melt, and the water, with the steam that would be instantly produced, would extinguish the fire before it could spread any further. By the use of mercury, in small cylinders with pistons, in instruments not much larger than thermometers, communicating by wires with valves in the cisterns, the water might be admitted whenever the temperature of the room rose above a certain degree, say 130° or 150° ; and this plan might be used with or without pipes of lead, so as at all events to insure a supply of water, without the intervention of human aid, whenever a fire broke out. We have mentioned Leicester Square as a desirable site, simply because it contains an open area in a central situation; but we by no means think it the only one. Mr. Raine has mentioned Charing Cross, and Mr. Hume has pointed out the space between Pall Mall and the Mall in St. James's Park; which last site has the advantage of being perfectly level; but we fear there is not width enough to furnish all the public offices that would be necessary, without infringing on Pall Mall, or, probably, St. James's Square, Soho Square, opened to St. Giles's Church on the one hand, and to Poland Street on the other; or Lincoln's Inn Fields, opened to Holborn and the Strand, would be suitable.

We consider it no objection to this plan, or to any other of the same kind, that premiums have already been awarded for designs adapted to the site at Westminster; on the contrary, we are of opinion that, if a second series of designs were required by government, the public and the architecture of the country would be gainers; and that the second series of designs would probably be much better than the first, from the knowledge gained by the architects while preparing their designs for the first competition. As human knowledge is always progressive, the attention of no man can be long directed to any given subject,

without his acquiring fresh ideas concerning it, however extensive his previous knowledge of it may have been; and no person can see the manner in which another person has treated a subject which has engrossed a great portion of his own thoughts, without feeling his own stock of knowledge increased, and his particular opinions shaken or confirmed. The competition which has recently taken place, particularly if the designs are exhibited, will unquestionably contribute much, not only to the progress of architecture as a science, but also to the improvement of the public taste, by directing public attention to architectural designs.

We do not consider either the amount of the sum already laid out in premiums, or that which would be expended in procuring a new site, and the buildings which would necessarily require to be purchased to be cleared away, of any consequence when compared with the immense advantages which would result from combining together all the government offices connected with parliament, and which would admit of an indefinite extent of these offices at any future time, on every side; an advantage, which at no expense whatever can ever be obtained for the site at Westminster, on account of the proximity of the Thames. The great object is, for the government to consider the subject till they are quite certain that they are acting on the most comprehensive views of present and future usefulness, convenience, and architectural dignity; and we are quite certain that the public will go along with them, without regard to the expense.

We shall conclude with one remark, which is, that there can be no mode of rebuilding the Houses of Parliament on the site at Westminster that will not materially injure the exterior effect, not only of Westminster Hall, but of Westminster Abbey; and that the true way to show respect to those magnificent buildings is to repair them, and then to leave them as monuments for the admiration of the architectural antiquaries of future ages. If the New Houses of Parliament are built there, it will, in our opinion, at least, be equally a proof of want of antiquarian taste, and of comprehensive views of public utility.

Bayswater, Feb. 12. 1836.

ART. III. *Miscellaneous Notices respecting the Competition Designs for the New Houses of Parliament.*

As the subject of the *New Houses of Parliament* is, at the present time, of intense interest to architects, not only in itself, but because it is likely, we think, to lead to the reformation of the system of competition generally, we have considered it advisable to bring together the following notices under one head, in order that they may be easily referred to. (See also p. 131.)

The Premiums for the Designs for the Houses of Parliament have been awarded since our last; measures have been taken for the exhibition of the unsuccessful designs; and proposals have been made, as will be seen in p. 97., for publishing the whole of them. The number of competitors was 93; and the entire number of drawings sent in was 1400. The first premium, of 1500*l.*, was awarded to Charles Barry, Esq., the architect of the Travellers' Club House, of various churches and villas, and of the magnificent alterations now carrying on at Trentham Hall, &c. We are proud to add, that he is the author of some designs for villas, &c. in our *Encyclopædia of Cottage Architecture*. Mr. Barry's design for the Houses of Parliament is of the most magnificent description: he proposes to sweep away the whole of the existing buildings on the site of the present Houses of Parliament, with the exception of Westminster Hall, and to erect a quadrangular pile, with the principal front facing the Thames, and a tower in the centre, 170 ft. high. The three premiums of 500*l.* each were awarded to Mr. Robert Hamilton of Glasgow; and to Mr. J. C. Buckler, and Mr. J. Railton, of London. Mr. Hamilton, whose acquaintance we had the pleasure of forming many years ago, is the architect of that splendid pile, the Glasgow Exchange; of several churches in Glasgow, and villas in its neighbourhood; and of the extensive improvements now making at Hamilton Palace. Mr. J. C. Buckler is the architect of Cossay Hall, Norfolk, Mr. Dighton's model of which we noticed in Vol. I. p. 181: he is the son of the eminent antiquary of that name, who is author of engravings of Monastic Antiquities; and he is himself one of our most eminent architectural draughtsmen. In his design, we understand he proposes to restore St. Stephen's Chapel. Mr. Railton is a young architect, distinguished by some Grecian designs in the supplementary volume, lately published, to *Stuart's Athens*. On the whole, we believe that both the architects and the public are satisfied that the premiums have been awarded with impartiality. From the well-known eminent talents of Mr. Barry, it was, from the beginning, anticipated that he would carry off the first prize; and the second, it was conjectured, would be given to the architect of the Bank of England, from his high connexions with the aristocracy. It is worthy of remark that, with the exception of Mr. Railton, none of the gentlemen who have obtained prizes were regularly brought up to the profession; that is, articulated to first-rate architects: at least, we have been informed that such is the case, and we are not at all surprised at it; since the genius which is sufficient to induce any young man to adopt a profession that he has not been regularly brought up to, will no doubt carry him farther in that profession than those who have been placed in it by any accidental circumstance of birth, convenience, or connexion. The unsuccessful designs are, with the permission and approbation of government, to be exhibited, forthwith, in the eastern wing, just completed, of the National Gallery now building in Trafalgar Square; and we shall probably be able to give some account of them in our next Number.

The Designs for the New Houses of Parliament.—The following is an extract from a letter which appeared in the *Morning Chronicle* of February 15.; and it affords the strongest reasons for the exhibition of the plans:—

"It appears to me that the unsuccessful candidates lie under the severest, the most cutting stigma which it is possible for the commissioners to inflict upon them; viz. that out of the whole 93 rejected designs not one was deemed worthy to receive the fifth premium of 500*l.*, which Parliament empowered them to bestow. I am informed that the commissioners have not hesitated to declare, that, with the exception of the four designs selected, there was nothing worth notice placed before them. That such is really their opinion is clearly proved, by their withholding a part of the compensation which Parliament placed at their disposal; they being required, by the 32d resolution of the Select Committee, to 'select and classify such of the plans, being not less than three, or more than five in number, as shall seem to them most worthy of attention.'

"In this painful predicament, the architects have but one course to pursue; in which, fortunately, they have the sanction of the present enlightened government. The use of the east wing of the new National Gallery has been kindly conceded for the purpose of forming a public exhibition of the rejected designs; and it is hoped that every architect will avail himself of this opportunity of contributing to remove the reproach of *incompetence* which now rests upon so large a portion of the profession. But this is not all that the public expect: it is hoped that the government will follow up their own straightforward honourable principles, by exhibiting, at the same time, those designs which have obtained the rewards; as, by this means alone can it be proved to *demonstration* that the premiums have been fairly bestowed, or properly withheld. It is due to the honourable commissioners to put an end at once, and for ever, to all surmises derogatory to their impartiality, their taste, or their judgment. It is due, in an especial manner, to the successful architects themselves: their just and honourable ambition cannot rest satisfied with the unsatisfied decision of the commissioners alone: but, above all, it is due to the public, whose property the successful designs are become, that, in a matter of this national importance, in which the whole energies of a highly talented and educated profession have been brought into action, every thing should be clear as day, so as to avoid even the shadow of a suspicion of unfairness or favouritism. Nothing that is now urged is intended to convey the slightest imputation upon the decision of the commissioners. The sterling merit of Charles Barry is so well known, that, long before the designs were sent in, it was the general opinion of the profession that he would bear off the prize; his name, therefore, at the head of the list, is all but a guarantee for the sound discrimination of the commissioners: still the public, also, have a right to be satisfied; and this can only be effected by the exhibition of *all* the designs together; when, I doubt not, the correctness of the decision of the commissioners will be as evident as their high personal honour and integrity are universally known and acknowledged to be. — *One of the Ninety-three.*"

The following are extracts from the report of a discussion of the subject of the New Houses of Parliament which took place in the House of Commons on February 17., as given in the *Morning Chronicle* of February 18.:—

Mr. Hawes rose to move, that it be an instruction to the committee appointed to consider and report on the plans for the two Houses of Parliament, to inspect all the plans which had been submitted to His Majesty's commissioners, &c., and to receive the estimates of the said plans from such architects as might be willing to furnish them to the committee. By making this motion, he did not intend to cast any reflection, directly or indirectly, on the commissioners; but he deemed the inspection of all the plans necessary, in order to convince the public, that, in selecting a plan for a building adequate to the purposes of the legislature, the decision come to was right and proper. It would give the public greater confidence in that decision. The course he was anxious to pursue would by no means open up the whole question again, which he particularly wished to avoid.

The *Chancellor of the Exchequer*, after stating the course that had been taken (and which has been repeated two or three times already during the present session) by the House of Commons in relation to these plans, declared it to be his opinion, that, if the motion of the Honourable Gentlemen were adopted, it would, in point of fact, be opening the whole case afresh. Of course, the committee would avail themselves of the opportunity of inspecting the whole ninety-seven plans that had been sent in to the commissioners; but if the House were, by special instructions, to impose upon the committee the duty to inspect all those plans, it would subject them to the greatest difficulty and embarrassment.

[The desire which the Chancellor of the Exchequer on this occasion, and

when Mr. Hume proposed to reconsider the subject of the site, does little credit to either his taste or his judgment; though, we admit, it is favourable to the despatch of business. The Right Honourable Gentleman, in reply to Mr. Hume, could only taunt him with having been one of those who agreed to the present site last session; adding, that he supposed that Mr. Hume, like others of his countrymen, was blessed with second sight (sight); a sorry pun, unworthy of the subject and the place where it was uttered.]

Sir Robert Peel asked the Chancellor of the Exchequer whether, when parties were invited to send in plans for the New Houses of Parliament, there was any public notice given of any limitation of the expense? For instance, were the persons invited to send in plans upon the assumption that Parliament would vote 500,000*l.*, or any other given sum, for the purpose of constructing the New Houses of Parliament? If not, and if the matter of expense were left a perfectly indefinite question, he was not at all surprised that one plan might obtain great preference over every other plan, although, under other circumstances, it might not be entitled to that preference. An artist might have sent in a plan, drawn on the assumption that one million would be expended on the new buildings, and upon that assumption he might obtain a great advantage over a more penurious artist, who assumed that not more than 300,000*l.* would be voted. Although, therefore, an artist might be entitled to the reward granted by Parliament, if that reward were given to the best plan, without reference to expense, yet another artist, who combined the two considerations of a good plan and an economical expenditure of the public money, might possibly, on those two combined considerations, be entitled to a preference. He therefore wished to know whether the parties invited to send in plans had any instructions with respect to the expense which Parliament might possibly sanction?

The *Chancellor of the Exchequer* said that the whole proceeding respecting the New Houses of Parliament had been the proceeding of the House of Commons, and that the course adopted by the government respecting the plans had been controlled by the resolutions of a committee up stairs. No limitation whatsoever with respect to expense was contained in those resolutions: the principal object was to get the best plan that could be obtained of a building for the accommodation of the legislature, and the artists were left entirely free as to the article of expense, no restriction being imposed on them, except as to the style of building. As no limitation of expense was imposed, of course all the architects were upon equal terms, except so far as one architect might let his imagination lead him very wide with regard to expense and decoration, while another might be more moderate in his conceptions.

Sir Robert Peel. Another particular practical question which he wished to ask was, upon what principle the commissioners, appointed by government to make the selection of the plans, had awarded the prizes? Was their decision made upon the mere abstract consideration that those were the best plans that were the most beautiful and that were calculated to afford the most accommodation; or did they also take into account what the expense of the erection might be?

The *Chancellor of the Exchequer.* No, no!

Sir Robert Peel. Then, really, the commissioners had gone upon a plan that might very easily give one man's plan a preference over another, which, if practically considered, would not be entitled to that preference; for if an artist sent in a plan upon the assumption that five millions would be expended on the building, he must have a decided advantage over others whose assumptions were not so extravagant. [Sir Robert Peel has here touched on a most important point, which, if followed out, would to a certainty upset the decision of the commissioners. We know one architect who gave in a design, and one of a very superior description, which we shall point out afterwards, who, in many of the details, was guided, in a great measure, by what he thought would be considered moderate in regard to expense.]

The *Chancellor of the Exchequer.* The only things the commissioners could take into account were the beauty and the convenience of the plans; because

the matter of expense never could be brought before them at all. They had only to decide on which was the best plan.

Mr. Hume said that the Right Honourable Baronet was quite correct in the view he took as to the proceedings of the artists. He was sorry that, in the course of their proceedings, they had made one or two serious errors. In the first place, they had made a grievous error in allowing commissioners to be appointed at all until the plans were given in; because he was informed (he might be misinformed) that some of those very gentlemen (although the Chancellor of the Exchequer had said that it could not be) had seen some of the plans before they were submitted to their selection as commissioners. He had been told that some of the plans were exhibited to a great many individuals, among whom were the commissioners themselves, by the architects, before they were sent in; and, as those commissioners were accustomed to see architectural drawings, it was quite impossible that it should be otherwise. Indeed, he had been informed that the successful candidate, *Mr. Barry*, had exhibited his plan before it was sent in. He (*Mr. Hume*) had not seen it; but it was said that the commissioners had inspected the very plan that had been selected as the best out of court. That was one mistake. The next was with regard to the expense. He could only say on his own behalf, that it was not his fault, for he had suggested that a limitation of the expense should be a part of the recommendation of the committee. He regretted that the House had not allowed the exhibition of all the plans sent in (both those which had been accepted, and those which had been rejected) together, in order that the public might have an opportunity of contrasting them, and forming a fair and competent opinion on the subject. [*Mr. Hume*, we think, should have here noticed a third grievous error, more grievous than all the others, and respecting which he made his motion some days before; viz. the not allowing the architects to choose their own site for the design, or not fixing on some other site than that of the old Houses. With respect to the subject of the plans having been seen by the commissioners, we have no doubt some of them were, and we believe, among others, that of *Mr. Barry*, for which we attach no blame to that gentleman, who, in common with all the other architects, had a right to exhibit his plans, if he thought proper, to all the world. That most of the competing architects did exhibit their plans to their friends, we believe, is generally known. We saw some, and we know one gentleman who saw seven or eight, and described the leading features of each. The magnificence of *Mr. Barry's* design, and the grandeur of his idea of a central tower as a royal entrance, were matters of conversation, among those interested in the subject, for weeks before it was announced that he had obtained the prize. We mention these things solely to show the wretchedness of the present system of competition, and in the sincere hope that, by aiding to expose it, we may be instrumental in leading to something better.]

The Chancellor of the Exchequer begged to express his most entire and unqualified belief that there had been no communication between the commissioners and the architects, and that no plan had been submitted to their inspection until the proper period arrived (hear, hear!). So little was known on the subject to the candidates, that one of the preferred parties [*Mr. Railton*] had even taken steps in conjunction with one of the disappointed architects to exhibit his plan with others that had been rejected, when, to his surprise and delight, he found that his design had been approved of. [This is no proof whatever that the commissioners had not seen some of the plans. From the very first offer of the premiums, it was intended by several architects to propose the exhibition of those plans which were unsuccessful; a fact which is generally known. If the Chancellor of the Exchequer wishes to convince the public that none of the plans were seen by the commissioners, he has only to get the commissioners individually to make a declaration to that effect.]

Mr. Warburton thought there could not be a greater absurdity than to require an estimate from different architects, inasmuch as the opinions of

different individuals about even the cost and value of the materials varied considerably.

Sir Robert Inglis expressed his belief that the committee had not the power either of requiring estimates from the different architects who had sent in plans, or of limiting them to any particular expense.

Sir Frederick Trench was certain immense difficulties would have been avoided if a *maximum* of expense had been fixed. He had no doubt that the best plans had been selected, but he had as little doubt that to carry out and complete any one of them would cost two millions of money (hear, hear!). After all, none of the plans which had been selected by the committee might be approved of by Parliament, and then the House would have to begin afresh. [We sincerely hope it may, and that the subject of the site may be reconsidered.] The whole of the plans sent in were about to be exhibited; and, if any honourable member saw one which he considered to possess greater merit than any of the four selected by the committee, he would have an opportunity of stating his opinion to the House. [It may seem a truism here to observe, that in architecture and engineering the merit of all plans is relatively to the expense. In the works of the first French and English authors on this subject; for example, in the *Leçons, &c.* of Durand, and in the *Letters, &c.* of Woods, the problem to be solved by the architect is stated to be, "how, in the given locality, with the given materials, and expense, to produce the required accommodation and effect."]

Mr. Hughes Hughes begged to state to the House a fact which would, perhaps, tend to show that the expense need not be so great as some honourable members had anticipated. It was this: one architect, who sent in a design, was told that it would be impossible to erect so magnificent a structure as he proposed, unless at an enormous expense. His reply was, "It might be well done for 500,000*l.*"

Mr. Charles Wynn did not imagine that the establishment of a *maximum* of expense would have been attended with any great benefit. It was very easy to fix a *maximum*, but how was it to be enforced? It was impossible that any architect could give security that his original estimate of 300,000*l.* should not ultimately be nearer 500,000*l.* or 600,000*l.* [To fix the *precise* expense may be considered as impossible; and, indeed, it is difficult to arrive at any thing near the expense, in the case of buildings of such immense magnitude, and so different in their plan from those of ordinary execution; nevertheless, there is a wonderful difference between an imperfect estimate, and proceeding at random. We will venture to assert, that, if the plans were properly drawn out in all their details, and competent surveyors employed to estimate the expense of executing them, the amount given in by these different surveyors would not differ more than 10 per cent.; nor, were they to be executed, would the difference be greater in the general amount, provided no material alteration were made in the plan, and no rise took place in the price of materials.]

Lord Stanley was very desirous to correct an erroneous impression which had gone abroad relative to the award of the commissioners. He had seen it very generally stated that they had awarded 1,500*l.* to the gentleman who had sent in the first plan, and 500*l.* to each of the other architects whose designs they approved of. Now, unless he was much mistaken, they had no power to make any such award. All they had to do was this: to select a number of plans, not less than three, nor more than five, to be referred to a committee to be appointed subsequently, composed of members of both Houses of Parliament; and to declare each of these plans entitled to a premium of 500*l.* A further recommendation of the committee was, that the architect of the plan ultimately selected, if he were not employed to build the Houses of Parliament, should receive a further premium of 1,000*l.*

The *Chancellor of the Exchequer* admitted the accuracy of his noble friend's recollection of the extent of the powers intrusted to the committee.

Mr. Smith O'Brien trusted that the gentlemen who had devoted their time

and talents to this very important service would receive adequate remuneration (hear!).

Mr. Hawes replied, and said he would leave the case for the decision of the House.

Lord Sandon observed, that it had been hardly ever found, in any case, that an architect was enabled to give in a correct estimate of the probable expense of a building, until it was actually erected. He hoped the principle of the resolution which had been moved by the honourable member for Southwark would be recognised and adopted by the House. [Mr. Hawes's motion was, however, negatived by a majority of 72; there being only 168 members in the House. We hope that the matter will be reconsidered, not only once, but several times; for there is yet evidently great ignorance and uncertainty in the House, as well as among the public at large, on the subject; and, in a matter of so much importance, it is alike due to the public, the Parliament, and the architects, to have every thing as clearly and as fully explained as possible.]

A new Site for the Houses of Parliament. — Since sending Art II. to the printer, we have mentioned to an eminent architect our idea of a new site, which should admit, at any future time, of surrounding the Houses of Parliament with all, or any number, of the government offices. We have also mentioned the subject to another gentleman in a government office, who has given us a list of the government offices below. The architect observed that the same extent of ground which it is proposed to occupy with the new government offices at Westminster would about cover the area within the railings of Leicester Square. He also mentioned that the area of Marlborough House and gardens would more than contain the New Houses of Parliament; but that to surround these houses with all the government offices in concentric quadrangles, with their diagonals north and south, would require the area (if the site of Marlborough House were chosen) to extend into the Green Park within a hundred yards of the water. Any person may satisfy himself on these heads by consulting the map of London. Should any young architect be disposed to exercise his ingenuity by devising a plan suitable for the whole, on the sites pointed out, or on any other, we shall be happy to publish it, if we should think it well arranged. We shall be equally happy to publish objections to the plan we have proposed.

List of the principal Government Offices.

Admiralty.	Lord Chamberlain's Office.
Army Department.	Office of Woods and Forests.
Army Pay Office.	Board of Ordnance.
Auditors of Public Accounts.	Parliament Offices.
Board of Control.	Secretary of State's Offices; viz. —
Board of Ordnance.	The Home,
Board of Trade and Plantations.	Foreign,
Courts of Law; including Court of Chancery,	Colonial,
Court of Exchequer, Court of King's Bench,	Irish, &c.
and Court of Common Pleas; &c.	War Office.
Exchequer Office of Pleas.	Treasury.
King's Exchequer.	Stamps and Taxes, &c.

ART. IV. *Dividend Pay and Warrant Office, Bank of England.*
By D. S.

SOME time back, a correspondent expressed a wish for an account of this new office in the Bank; and, by the kindness of the proprietor of the *Companion to the Almanack* (a publication which, we ought to observe, contains in each volume much information relative to the principal architectural improvements carried on in the metropolis during the respective years of its publication), we are now enabled to introduce a view of the apartment (*fig. 20.*), and consequently to describe it more satisfactorily than we otherwise could do.

This office, which is situated immediately behind the colonnade of the west wing of the south front, and forms one side of what is called the Garden Court, occupies a space of 94 ft. by 42 ft. Below, it is divided longitudinally into three equal aisles, by two ranges of coupled Corinthian columns, forming six spacious inter-



columns on each side; and, whatever may be alleged in general against the practice of coupling columns, this instance may be taken as a judicious exception, since such arrangement was obviously dictated by that of the Venetian windows towards the court, which previously existed. These also necessarily regulating the intervals between one pair of columns and another, rendered it indispensable to make them unusually wide in proportion to the diameter, or, rather, to the height of the columns; for, where columns are coupled, it is their united breadth which,

in some measure, governs that of the intercolumns. Yet, although these latter might be pronounced excessive, and so far faulty, were we to examine the colonnades by themselves, without reference to the other parts of the plan, when we perceive the motive for what has been done (the consistency and harmony arising from the intercolumns corresponding with the compartments formed by the windows, and the regular distribution of each side into six squares), both the eye and the judgment are reconciled to what, under other circumstances, might, not unjustly, be censured as a defect.

The centre pair of columns, on either side, is attached to a pier, between which and the wall is an open screen corresponding in its design with the Venetian windows; and, as will be seen by the view, the middle portion of the room is also partitioned off by a handsome bronze railing and double stove; the railing being made to slide into a groove between the two fire-places of the stove. The introduction of these open Venetian windows, and the stove, materially improves the perspective effect by the variety they occasion; and the former contribute also to the expression of strength.

The entablature is rather diminutive and plain for the order; at least, so it would appear, were it not for the deep and highly enriched cove which surmounts it, and which may fairly be considered as forming an aggregate portion of the order itself; as it naturally forms the architectural finish to it, and defines the lower from the upper part of the elevation. Besides what it contributes to the design by its enrichment, two pleasing results arise from the application of this cove: by its projection, it causes the upper part of the room to seem to expand, and to appear wider than it otherwise might do; and, in the next place, owing to its being entirely thrown into delicate half shadow, it serves to prevent a too great glare of light, while the contrast of tint gives additional brilliancy to the upper story.

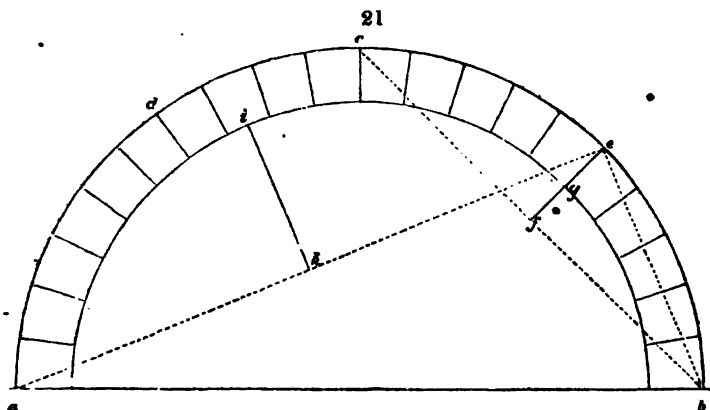
With the exception of the arches, the centre space of the room may be said to be entirely roofed in with glass, above which there is an external skylight; and the effect of light, increased, in some degree, by the narrowness of the space, and the consequently strong reflection from the wall on which it strikes to the opposite one, is not a little powerful. Here, then, we have a convincing proof, among many others, how highly advantageous this system of introducing the light is for public rooms, and, indeed, all where it is practicable, and where external view is not required. It strikes us, therefore, as rather extraordinary that it should not have been adopted in any of the recently built churches in the Grecian style, not only on account of its being so favourable to architectural effect within (admitting a full stream of central light, instead of scattered spots of it), but also

because it at once removes all occasion for windows in the external walls; which, owing to their number, if nothing else, always operate as blemishes; or, if even rendered tolerable, still are too repugnant to the idiom of the Greek style to be allowable, save through sheer necessity, where that style is otherwise affected to be rigidly adhered to. Another reason for admitting light from the top is, that when, as frequently happens, there are columns in front of the galleries, the effect of light received through the windows is reversed from what it ought to be; for, although the columns are by no means so closely spaced as to form anything like a screen, less light falls upon them, and is admitted into the body of the church, than falls upon the space behind the columns. Or, supposing light to be also admitted from an upper range of windows over the galleries, there is again this disadvantage, that, in such case, the light becomes too equally diffused throughout, to the utter extinction of shadow, and the loss of architectural repose.

It will be seen that the range of upper rooms (called the Accountant's Drawing Office) are continued quite round the interior, there being a window similar to the one shown in *fig. 20.* at the other end of the room. These windows, and those along the sides, intended not to admit light into this hall, but to receive it from it, certainly produce a character very unusual in internal architecture; one that is piquant as well as novel. Another circumstance that calls for some remark is, the uncommonness of the proportions. Those who are of opinion that the same proportions, and, so far as they are concerned, nearly the same effect, should uniformly be preserved, will probably object that the centre portion of this apartment is too narrow for its height, the latter being about three times its width (or equal to the entire width of the lower part, including the side divisions): yet, as narrow proportions and lofty proportions are equivalent in meaning, and loftiness is a quality in which even excess is hardly deemed a fault, we are far from being disposed to censure the design on such grounds; or, we should rather say, we like it all the better for the peculiar character it thus acquires, that character being, upon the whole, no less pleasing than it is striking and novel. Much liberality has been shown as regards the ornamental part of the architecture; the ceiling of the side divisions below are richly embellished, and there is also much decorative sculpture, consisting of a series of allegorical figures in bas relief, placed in the spandrels of the arches. Upon the whole, Mr. Cockerell, the present architect to the Bank, must be allowed to have here shown himself an able and worthy successor to Sir J. Soane; for what he has here done is one of the most original pieces of interior architecture to be met with in any of the public buildings of the metropolis.

ART. V. *Experimental Essays on the Principles of Construction in Arches, Piers, Buttresses, &c.* By WILLIAM BLAND, Esq., Jun. Essay II. *Experiments, with Weights and Structures, on Arches of various Dimensions, composed of Wooden Voussoirs, and of Bricks, without Cement, but having the Aid of Friction, and immovable Buttresses at the Base, or Foundation.*

Experiment First. — THE scale proposed to be adopted for the diagram (*fig. 21.*) is an eighth of an inch to an inch. The semi-circular arch (*a b c*) is 24 in. in span, and composed of twenty

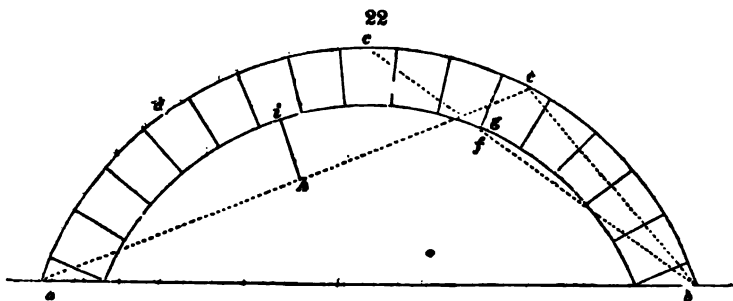


wooden voussoirs; the dimensions of each of which are 4 in. long, $2\frac{1}{2}$ in. wide, and 2 in. in average thickness; the weight of each is half a pound, so that the whole arch weighs ten pounds. Having placed this arch on a table, and secured the voussoirs *a* and *b* from being pressed out, a pound weight was put on the crown at *c*, which the arch supported; but, a quarter of a pound more being added, it gave way by sinking at *c*, and flying out at the points *d* and *e*, or between the fifth and sixth voussoirs from the foot and crown.

The dotted line *b c* is drawn straight from the crown of the arch (*c*) to the outside of the lowest voussoir (*b*); and the line *f g*, which is drawn perpendicular to *b c*, denotes the farthest point *f*, from the intrados at *g*, and which is, in this instance, $1\frac{1}{4}$ in.

Experiment Second. — The same arch (*fig. 21.*), at the point *c*, carried 4 lb., but it gave way when half a pound more was added. The dotted line *e b* lies within the voussoirs; but the dotted line *a e*, at the point *h*, equals $6\frac{1}{4}$ in. from the intrados of this arch at *i*.

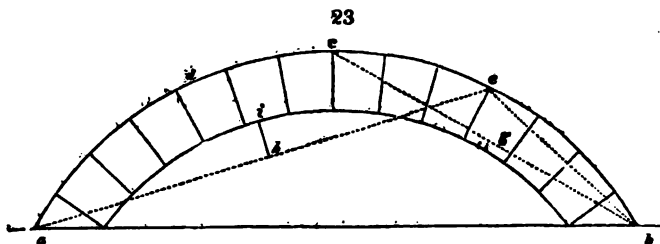
Experiment Third. — The arch (*a b c*) (*fig. 22.*) is composed of fifteen voussoirs, and is $22\frac{1}{4}$ in. in span, being a segment of



the semicircular arch (*fig. 21.*) This segmental arch sustained on the crown, at *c*, a weight of 42 lb.; but it gave way with a weight of 56 lb., by sinking down at *c*, and by being forced out at the points *d* and *e*; the voussoirs at *a b* were secured from being pressed outwards. The dotted line *c b* almost touches the intrados at *g*.

Experiment Fourth. — The same arch of fifteen voussoirs (*fig. 22.*) sustained, at the point *c*, $3\frac{1}{2}$ lb., but gave way when half a pound more was added. The perpendicular *h i* equals $3\frac{1}{2}$ in.

Experiment Fifth. — The arch (*a b c*) (*fig. 23.*) is composed of twelve voussoirs, out of the twenty voussoirs of the semicir-

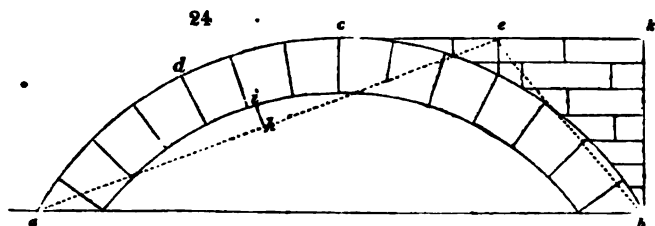


cular arch (*fig. 21.*), and is rather more than 19 in. in span. On the voussoirs at *a b* being made immovable, I placed my foot on the crown at *c*, and stood with my whole weight upon it (a weight equalling 147 lb.), and it supported me without yielding in the least degree. The dotted line *c b* lies, in this arch, quite within all the voussoirs. The line of the joint of the voussoirs, at *e*, is nearly at right angles to the line of force (*c b*); therefore, the weight has no tendency to displace or force those voussoirs upwards.

Experiment Sixth. — As this arch proved to be so very strong, I determined upon finding out its weakest parts; and, by trying different weights, I discovered them to be at the points *d* and *e*, just half way between the crown (*c*) and the base (*a b*). When the weight of 6 lb. was placed at *e*, the arch was balanced with

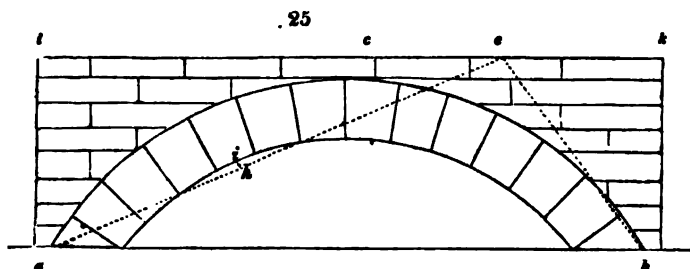
it; but, on attempting to add more, the arch sank at *e*, and was forced out at *d*. The straight line *h i* equals $1\frac{1}{4}$ in.

Experiment Seventh. — *Fig. 24.* is the same segment of an



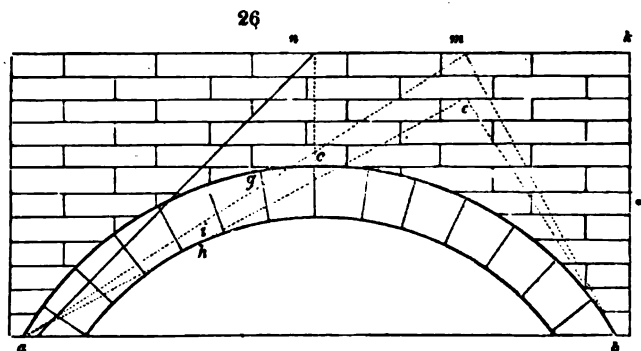
arch as *fig. 23.*, being composed of twelve voussoirs. Between *c* and *b* some wooden bricks were placed, as represented by *c k b*, which were built up regularly. At the point *e*, which is perpendicularly over the weakest part of the arch on this side, some weights were placed, and the arch was found just to balance with 14 lb.: the brickwork consisted of fifteen wooden bricks, eight of which weighed 1 lb. The dotted line *e b*, in the diagram, is almost without the voussoirs; and the dotted line *a e*, at the point *h*, is about 1 in. from the intrados at *i*.

Experiment Eighth. — When both sides of the arch were bricked up as represented in *fig. 25.*, and one course of brickwork



over the crown at *c*, this arch, of twelve voussoirs, just balanced with 21 lb., placed, as before, at *e*. The number of wooden bricks on each side of the arch was fifteen, and four on the top; making, in all, thirty-four, eight of which weighed 1 lb. The dotted line *a e*, at *h*, is only $\frac{1}{4}$ in. from the intrados at *i*.

Experiment Ninth. — The diagram (*fig. 26.*) had the brickwork raised three courses above the crown of the arch (*a b c*), which arch was also composed of twelve voussoirs. At the point *e*, 56 lb. were placed, which the arch firmly sustained; and, on raising the fabric two more courses, the arch, at the point *m*, carried my weight, or a weight of 147 lb. The dotted line *e a*, in the first case, just touches the intrados at *h*, so that the

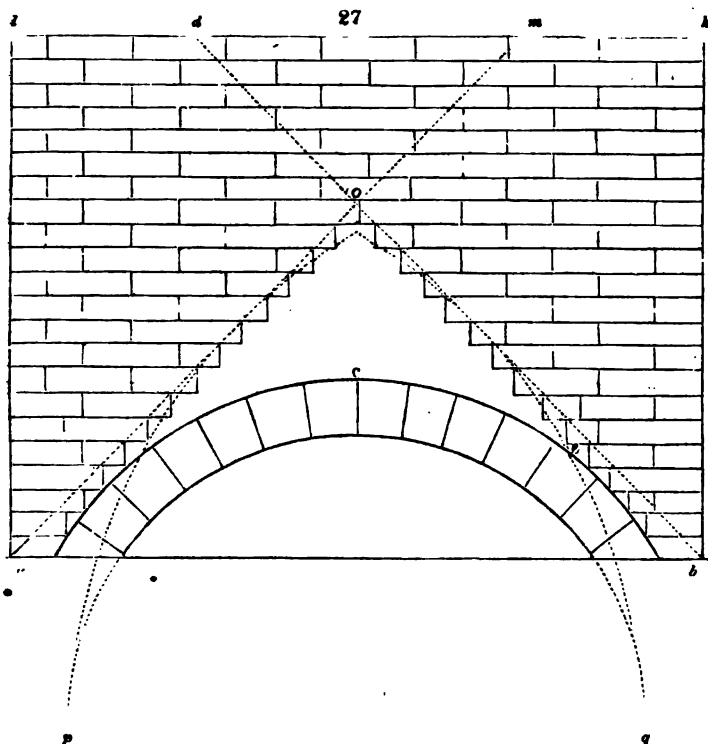


straight line $h i$ vanishes. In the second instance, the dotted line $a g m$ lies considerably within the voussoirs, similar to the dotted line $c g b$, in the fifth experiment.

Let a weight be placed at n , which is perpendicularly over c ; then the straight line $n a$ is the shortest, and most direct one from the weight itself, or from where it is placed, to the ground at a , by which it is ultimately supported. For, if it be not, let the force act from n to c , and from c to a ; and we have then, in the figure $n c a$, a triangle, having the two sides, $n c$, and $c a$, less than the third side ($n a$), which is impossible; therefore the straight line $a n$ is the shortest direction of the force. For the same reason, the dotted lines $m a$, $e a$, $m b$, and $e b$, are the most direct lines by which the force of any weight, placed at m , or e , acts on the ground at the points a and b .

Experiment Tenth. — Having raised the brickwork above the arch ($a c b$) (fig. 27.), so that the dotted line $a m$, and the line $a b$, contained an angle ($m a b$) equal to 45° , the point m being perpendicularly over e , the arch was taken away, as also the brickwork between the crown c , and where the dotted lines $a m$, $b d$, cut each other at o . The fabric, thus left standing; was supported on the piers $a b$ by the natural arch, formed by the projection of a brick in each course over the opening, until the projecting bricks met at o .

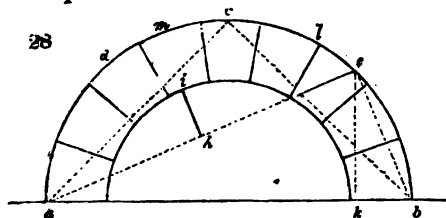
This goes to verify the old adage, that, the more an arch is loaded by regular masonry, the more it will bear; but the truth is, as may be seen by this experiment, that the more it is loaded, the less it has to bear, since the maximum of the weight is limited at the intersection of the two dotted lines $a m$ and $b d$; because the structure above these lines is then born by the piers (a, b) of the natural arch ($a o b$). The arch, therefore, in this instance, becomes a centring only, on which the superstructure is erected. Whenever, then, a centring of this kind is required, on which to erect a high wall or building, as a tower, the Gothic form of an arch is the best, since it is of a form which coincides the



nearest to the natural arch (for any breach through a wall of masonry takes this form in the upper part of the opening); at the same time, it possesses a great degree of beauty and elegance.

From what has been before shown, the fabric without the arch will bear at the point *m*, which is perpendicularly over *e*, any weight, since the dotted line *m a* passes within the masonry; and, consequently, it will sustain any weight on any other part of the masonry, if the piers at *a* and *b* are kept in their places.

Experiment Eleventh. — The semicircular arch (*a b c*) (*fig. 28.*)



is of 10 in. span, and is composed of nine wooden voussoirs. The dimensions of the voussoirs are the same as those used in the ten preceding experiments, and their average thickness is $2\frac{1}{2}$ in.; the

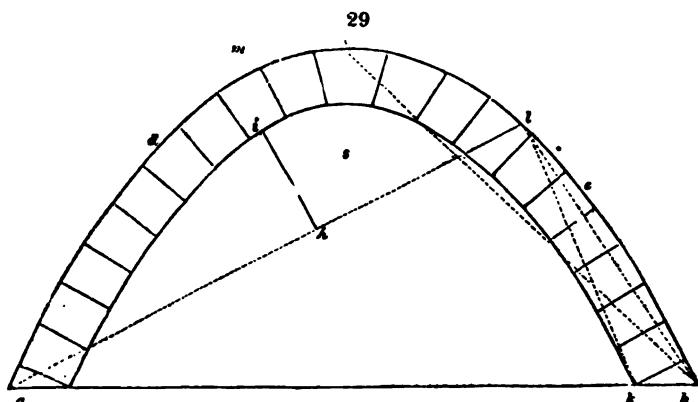
weight of the whole arch is $4\frac{1}{2}$ lb.

Having placed this arch on a table, and secured the bottom voussoirs at *a* and *b*, it then carried my weight as firmly as pos-

sible, when standing on one foot on the crown, at *c*. In this experiment the dotted line *c b* lies quite within the voussoirs; and the distance from *f* to *g* in the intrados is half an inch. The point *h*, in the dotted line *a e*, is 2 in. distant from the point *i*, in the intrados.

The arch, at the point *e*, carried my weight, because a perpendicular line (*e k*) could be drawn within the voussoirs to *b*; therefore there was no lateral force sufficient to overturn the voussoirs between *e* and *a*, it being counteracted by the friction between the surfaces of the two bottom voussoirs (*e* and *b*). But, when a weight was placed at *l*, the arch balanced with 28 lb.; consequently, *l* is the weakest part of the arch, with voussoirs of this proportion of depth.

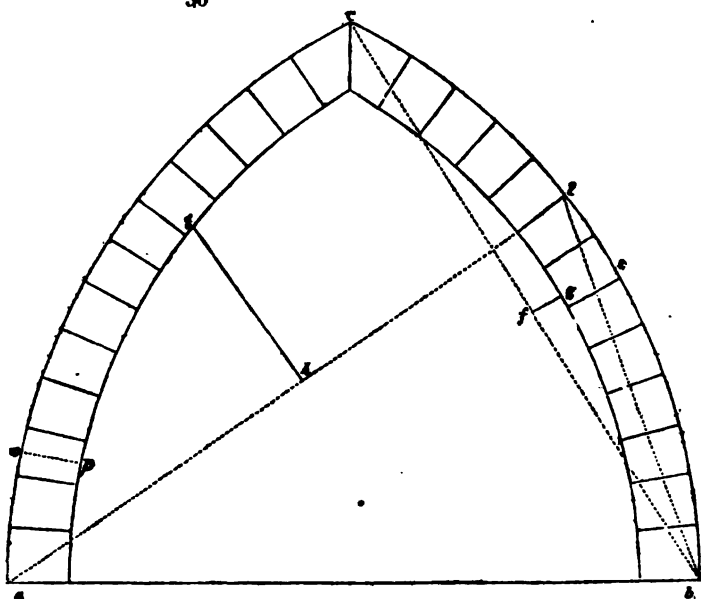
Experiment Twelfth. — The arch (*fig. 29.*) carried on the crown, at *c*, 50 lb.; but, when 6 lb. more were added, it opened



at *d* and *e*, and fell down. The arch is 24 in. in span, and the dimensions of the voussoirs are the same, as to weight, as in the preceding experiments. The arch carried 3 lb. at the point *l*, but gave way with 4 lb., by being forced out at *n*. The dotted lines *a, l*, at *h*, is $4\frac{1}{2}$ in. from the intrados at *i*.

Experiment Thirteenth, on Pointed Gothic Arches. — The arch (*a c b*) (*fig. 30.*) is of 24 in. span, and composed of the same voussoirs as used in the preceding experiments, with the addition of a few wooden bricks, introduced between the voussoirs to increase the dimensions of the circle. When this arch was placed on a table, it required a 2-lb. weight at *c* to balance the upward pressure of the sides, and to preserve it from falling, in consequence of the shallowness of the voussoirs at *o p*, in this diagram. When 1 lb. more was added to the two, the arch carried it well; but, under the total weight of 4 lb., the arch gave way, by the crown sinking, and by the sides being forced out. The straight line *f g* equals $1\frac{1}{2}$ in. At the point *l*, this arch would only carry

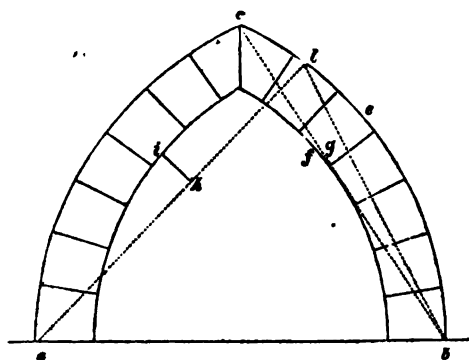
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1 lb.; and the straight line $h i$ equals 7 in. from the intrados at i .

Experiment Fourteenth. — The small Gothic arch $a b c$ (fig. 31.) is of 12 in. span; and it carried, on the crown, at c ,

14 lb. In this instance, the straight line $f g$ nearly vanishes. At the point l , the arch carried 5 lb.; but it was forced out at d , on the addition of another pound. The line $h i$ equals $2\frac{1}{2}$ in. in length.



Having submitted to experiment with weights the several preceding arches, it would now be well to

take into consideration the effects consequent on the variations of the straight lines $f g$ and $h i$, as derived from the dotted lines $a c$, $c b$, $a e$, and $a l$, in the different preceding figures.

Facts have shown, that, in proportion to the length of the straight lines $f g$ and $h i$, so has the power of the arches decreased, or they are inversely to each other: meaning, that the greater the curvature between the two points $a c$, $c b$, $a e$, or $a l$,

or, the less the depth of the voussoirs *o p*, the less is the strength of the arch. Again, the arches have always given way, and the voussoirs have been forced outwards, at the midway point between the extremes *a* and *c*, *a* and *e*, and *a* and *l*. When, however, the same dotted lines have fallen at a distance within the voussoirs, as instanced in the experiments fifth, ninth, and eleventh, the arch, or arches, have borne almost any weight. The same result has taken place when the shallowness of the voussoirs required the aid of a superstructure of wooden bricks to cause the dotted lines to fall within the voussoirs, or above the intrados.

The conclusion which may be fairly drawn from these experiments and remarks is, that weight acts in straight lines, and always takes the nearest or most direct course from itself, or from where it is placed, to the ground by which it is ultimately supported, as in the ninth experiment (*fig. 26.*). This being the case, the two extremes of the curvature of every segment of an arch (as *a c*) (*fig. 21.*), act as levers, having as the fulcrum the centre point of the intrados, which is opposite to *d* between the extremes; and which, therefore, is measured by a line (as *i h*, or *g f*) drawn from the centre of motion; or the fulcrum *i g*, perpendicular to the direction of the line of force, or weight, as at *a c*, &c. (See *Wood's Mechanics*, articles 81, 82, and 83.)

This force is increased as *i h*, or *f g*, lengthens; and is in proportion to the approximation of the two extreme points *a* and *c*, &c.; consequently, when an arch once begins to give way, its destruction becomes inevitable, being expedited and made certain by the continued increasing length and power of these two levers (like the handles of a pair of pinchers or nut-crackers), of half the arch, or of the four levers, when the whole arch is considered.

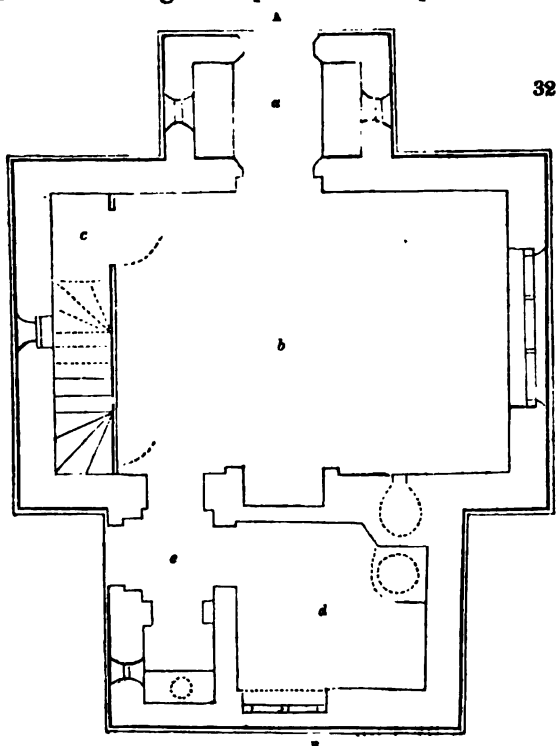
ART. VI. *Design for a Labourer's Cottage.* By EDWARD BRIGDEN, Esq., Architect.

THE proposed object of this cottage being to form a habitation for a labourer, all ornament of an elaborate or costly kind is out of character; and the building would hardly, if decorated with gewgaws and finery, be considered as indicating, by its adaptation to the end in view, any fitness or propriety. Substantial convenience is what should be mainly looked at in these structures: they should be as commodious as the nature of the case allows; and any little comfort which the labourer might highly value, yet which would be of but small cost, should never be grudged.

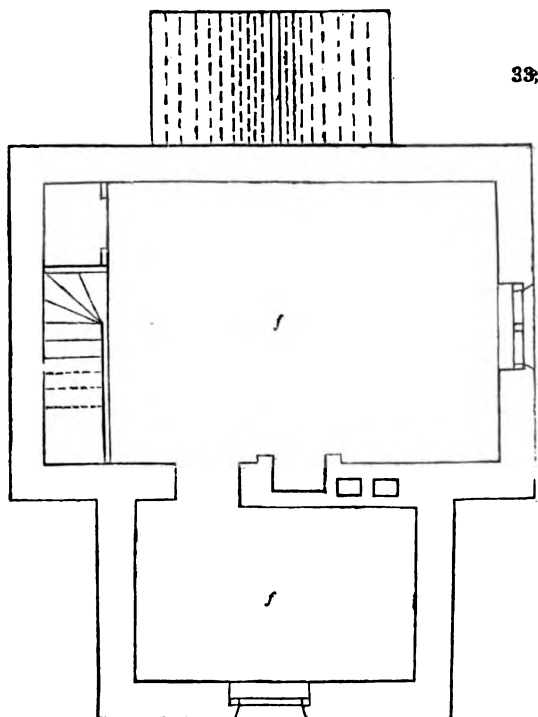
In this design, a wooden floor is introduced in the living-room (instead of stone), as one of the many means of assisting, in some degree, to render more comfortable the home, and thus to add

to the happiness, of some of the lowlier and more neglected portions of human beings.

Fig. 32. shows the ground plan. In this plan, *a* is the porch,



with a seat on each side, and a window above each seat; *b* is the kitchen, or principal living-room, 17 ft. by 12 ft., fitted up with an oven, &c., and having the closet *c* adjoining to it; *d* is the back-kitchen or washhouse, $7\frac{1}{2}$ ft. by 8 ft., with a copper boiler fixed in the corner adjoining the oven in the other room, so that the same flue may serve for both; and *e* is a lobby leading into the yard, with an opening on one side into the privy. *Fig. 33.* is the chamber plan; *f f* are bed-rooms, the largest having a dark closet (*g*). *Fig. 34.* is a section on the line *A B*, in *fig. 32*. In this figure, *h h* shows the ground line; *i* is the porch; *k* the kitchen; *l* the back-kitchen; and *m, m* the two bed-rooms. The kitchen floor is formed of inch-boards laid on sleepers, 2 in. by 2 in., the sleepers being placed 5 ft. apart. The joists of the larger bed-room are 8 in. by 2 in., placed on wall-plates 5 in. by $2\frac{1}{2}$ in. The joists of the smaller bed-room are 7 in. by 2 in., laid on wall-plates of the same dimensions. The tie-beams of the rafters are 5 in. by $1\frac{1}{2}$ in.; the rafters are 4 in. by 2 in.; the



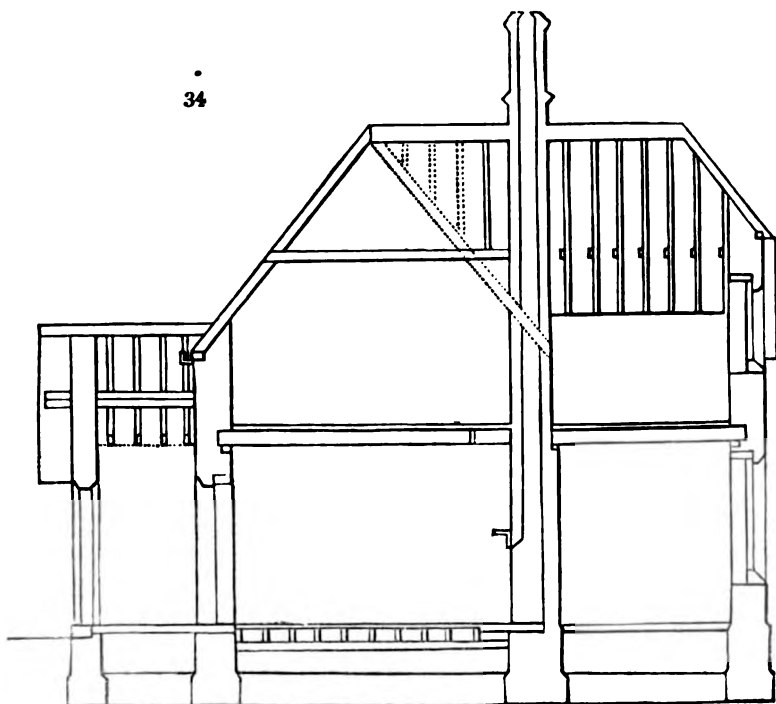
ridge-plate is 7 in. by 1 in. The rafters of the porch are 4 in. square, and the ridge-plate is 5 in. by 1 in. The lintels to the windows are 12 in. by 4 in.

Fig. 35. shows the front elevation, and *fig. 36.* the side elevation. *Fig. 37.* is the window of the living-room, drawn to a larger scale, showing the labels, mullions, &c. ; and *fig. 38.* is a plan of the same window. The porch is made deep, and furnished with seats and windows, in order to serve, in some measure, for a summer room, in which the labourer's wife might sit at her work, &c. ; or the labourer himself read in a summer's evening, after his day's work was done. Light is essential to health and cleanliness ; and, therefore, the window of the living-room is made large. The closets are important for comfort and economy ; and the flues are contrived so as to lose as little heat as possible.

SPECIFICATION.

MASON'S WORK. — The ground is to be excavated to the necessary depth for the walls, drains, cesspool, &c. ; allowing, also, a space under the ground-floor joist of 12 in. : the spaces round the walls being filled in and rammed. The whole of the surplus matter is to be carted away.

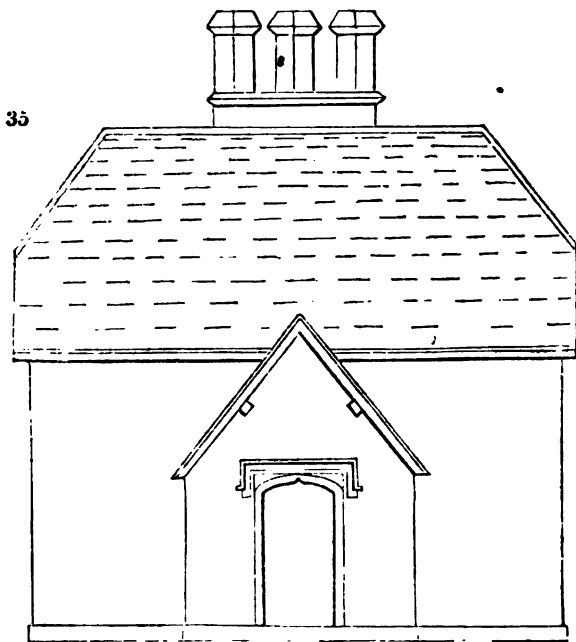
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The walls are to be well and soundly built of good flat-bedded Penant stone; having bond-stones introduced every 5 ft. apart; and the quoins hammer-dressed. The external fronts are to be faced with hammer-dressed Penant stone, laid in courses not exceeding 6 in. wide; and the joints to be neatly pointed with smith's coal-ash mortar. Dry bricks are to be introduced round the ends of all the joists.

The mortar is to be made of well-burnt stone lime, and clean sharp grit sand, or coal ashes, well mixed in proper proportions, and thoroughly tempered; no more mortar being made at one time, than will suffice for two days' use.

The plates, bonds, lintels, &c., are all to be bedded at their respective levels; the walls being leveled for the purpose. Door and window-frames are to be bedded, and pointed up the reveals. Grooves are to be cut, and holes made, where required. All apertures are to have rough brick, or stone, arches turned over them. Trimmer arches, of $4\frac{1}{2}$ brickwork, are to be turned before the fire-places. Flues are to be carried up 12 by 9, properly parqueted, and afterwards cored. The plinth round the building is to be of Penant stone, scabbled, and properly bonded to the



walls. The dressings, or jambs, to the porch to be of the same material and workmanship. The chimney-shafts are to be finished in the same manner as the face of the walls of the building. The external quoins of the windows and entrance-door are to be splayed, as shown in *fig. 36.*, 6 in. by 6 in.

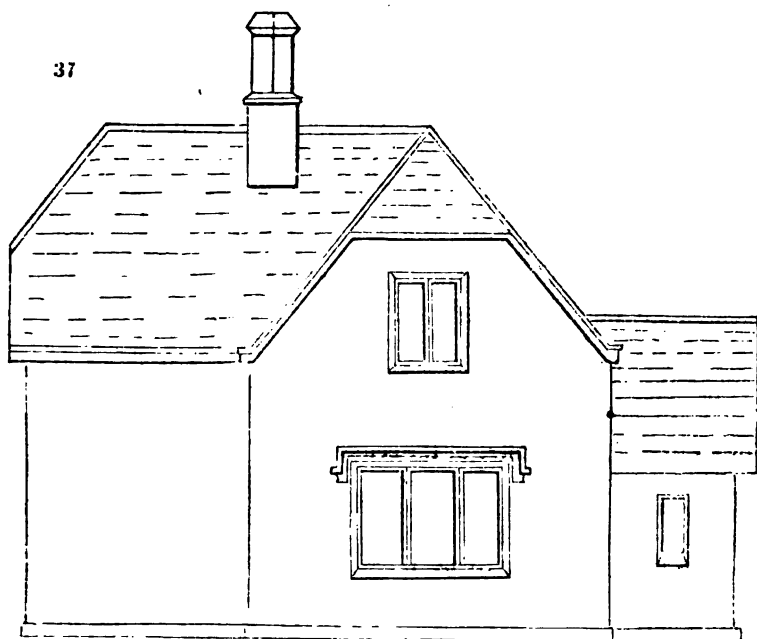
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The window-sills, window and door heads, and labels, and chimney caps, are to be of Bath freestone, properly worked and cleaned off; the door and window-heads being in one stone each. All the freestone to be used is to be protected, during the progress of the building by boarding, or other effectual substitutes.

The scullery, porch, and sheds on each side, are to be paved with scabbled Penant paving, laid in mortar, in a sound manner; no stone containing less than three superficial feet. The living-room fire-place is to have a Penant rubbed chimney-piece, with plain mantel-piece, jambs, coves, slips, shelf, &c. complete; with scabbled outer and inner hearths.

An economical kitchen-range, having a boiler, is to be provided, and fixed in this chimney-opening by the mason; it is to be properly fixed with fire-bricks and Stourbridge burr, with proper flue and damper. A Barnstaple oven is also to be provided, and fixed in this room, capable of baking 2 pecks of flower. It is to



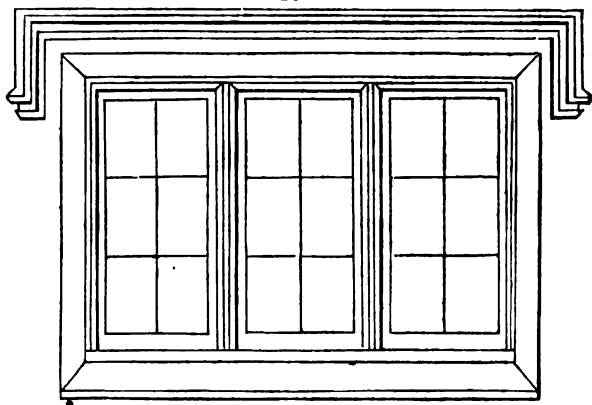
have a fire-place and flues gathered all round it, and issuing at the top.

In the scullery, an iron boiler is to be provided and fixed, 18 in. in diameter, with fire-place, door, furnace bars, and flue; it is to be properly walled round with brickwork; and the dressings to door and ash-pit are to be of freestone.

The bed-room chimney-piece is to be of freestone, worked plain, with jambs, mantel, slips, coves, &c. complete, having hard stone hearths. The mason is also to provide and fix a 20-in. low metal sham stove, complete. All the fire-work is to be set with Stourbridge clay.

The steps at the entrances are to be solid, square-nosed, and scabbled, of Penant stone. The external door-frames are to be provided with properly rebated hard stone plinths. Drains are to be made to convey away the waste and rain-water, and soil to the cesspool, formed, as shown in *fig. 38.*, 9 in. wide; the sides being of stone walling, and the top and bottom of paving. The privy is to be trunked up with brickwork, having an iron trap set in cement. Traps are also to be introduced in the drains, where required. A sink stone, 2 ft. long, 1 ft. 3 in. wide, and 6 in. deep, is to be fixed in the scullery, on a brick stack; having a proper trunk to the drain, bell-trap, and grating. A grating and trap is



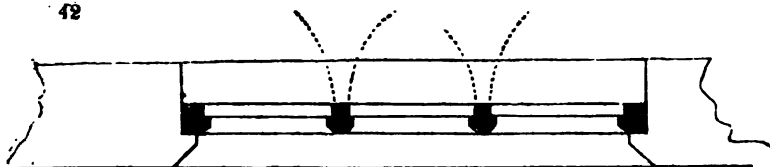


to be fixed in the centre of the scullery ; and the paving is to have a current towards it. A cesspool is to be built dry, and domed over, 10 ft. deep, and 4 ft. diameter in the clear ; it is to have a man-hole at the top, covered with a stout flag-stone. Air gratings, 4 in. square, are to be fixed in the external walls, under the wood floors, not more than 5 ft. apart. All rubbish is to be carted away by the mason.

CARPENTER'S AND JOINER'S WORKS. — All the timber is to be of the best quality, and of the description called batten ; it is to be sound, free from sap and large and dead knots, and well seasoned. The deals are to be dry Christiana or Gaffelle. The several scantlings are figured on the drawings. The joists, rafters, plates, &c., are to hold their full thickness when fixed. The plates are to be due square, and well united at the angles ; they are to be in long lengths, and properly scarped where required ; blocks are to be worked in the walls for fixing the joinery work. The joists are to be cogged down to the plates, and well nailed. The roof is to be formed as shown : well framed, notched, cogged and scarped, and nailed where required. No joists, rafters, or ceiling joists are to exceed 13 in. apart from centre to centre. A row of herring-bone strainers, as shown in *fig. 40.*, are to be fixed between the joists, over the living-room. The joists are to be properly trimmed before all fire-places. Arch centering is to be provided for the mason where required. The



two external doorways are to have solid rebated and chamfered frames, 3 in. by 3 in., as shown in *fig. 41.*, properly tenanted into the plinths by means of iron dugs ; and well secured to the masonry by arms and wedges. The external doors are to be formed of $1\frac{1}{2}$ in. deal, beaded, ploughed and tongued together, having strong ledges, $1\frac{1}{2}$ in. thick, and 9 in. wide ; they are to be hung with



18-in. cross-garnet hinges; and each door is to have two 6-in. barrel-bolts, and a good 8-in. stock-lock and Norfolk thumb-latch. The internal doors are to be ledged, of 1-in. deal, ploughed, ⁴³ tongued, and beaded; hung to 1½-in. rebated jamb linings, 6 in. wide, with 16-in. cross-garnet hinges, as shown in *fig. 43*. In this figure, *a* is the wall, and *b* the jamb lining. Each door is to have a thumb-latch. The window-openings are to have solid frames and mullions, as shown in *fig. 44*, 4 in. by 3 in. rebated and chamfered, firmly fixed to the stonework. The sill is to be ⁴⁴ of English oak, properly sunk and weathered. The sashes are to be formed of 1½-in. deal, moulded, and hung to the frames, each by two 3-in. butt-hinges. Each sash is to open, and to have a strong eye and hook to fasten it when closed, and also a stayhook and staple, to keep it open when required. Shutters are to be fixed to all the ground-floor windows, formed of 1½-in. deal, clamped, and hung so as to fall back against the wall, by means of a rule joint; they are to be hung with 3-in. butts, and each is to have a spring-bar fastening. The floor of the living-room is to be laid with 1½-in. deal; straight joints, and no board exceeding in width 7 in. The privy and bed-room floors are to be of 1-in. deal. Mitred margins are to be fixed round all the hearth-slabs. Staff-beads are to be fixed to all angles where required. The stairs are to be formed with 1-in. treads and risers with round nosings, supported on proper carriages, and having string-bound newels and deal rounded handrail. They are to be enclosed up to the ceiling of the chamber floor with braced boarding, 1 in. thick, properly ploughed, tongued, and beaded. The doors in the partition to be as before described, but hung to a rail fastened to the partition. Under the stairs, and in the front bed-room, are to be formed closets, having three shelves in each, the doors to which are to be 3 ft. wide, having good cupboard locks. Inch torus skirting, 7 in. high, is to be fixed to all the boarded apartments; and 1-in. window-boards are to be fixed to the windows on bearers. Seats are to be fixed in the porch, as shown, rounded on the edges, having strong uprights underneath, formed of 2-in. deal. Inch pipe-casing to be provided where required. A dresser is to be fixed in the living-room, 5 ft. long, extending the height of the room. It is to have a 2-in. dresser-top, 1 ft. 6 in. wide, with 3 drawers under, 6 in. deep; and over the top

shelves are to be fixed, 9 in. wide, and 1 ft. 6 in. apart, properly beaded. The cheeks are to be $1\frac{1}{2}$ in. thick. The privy is to be fitted up with 1-in. movable seat and riser; a proper hole to be cut, with turned cover, &c. A curb, and a $\frac{3}{4}$ -in. cover to the boiler, with a strong handle, are to be provided, and the former fixed. Screws are to be used for the purpose of putting on all the locks, bolts, hinges, and other ironmongery.

PLUMBER'S WORK. — The valleys are to be laid with 6-lb. cast lead, 18 in. wide. Cast-iron shoots are to be fixed to the eaves, 3 in. wide; and three 3-in. pipes, to convey the rain-water into the drains. The whole is to be properly and securely fixed.

TILER'S WORK. — The roofs are to be covered with good picked stone tiles, laid on strong heart red deal battens, and they are to be well and properly pointed. The ridge is to be covered with a freestone creese.

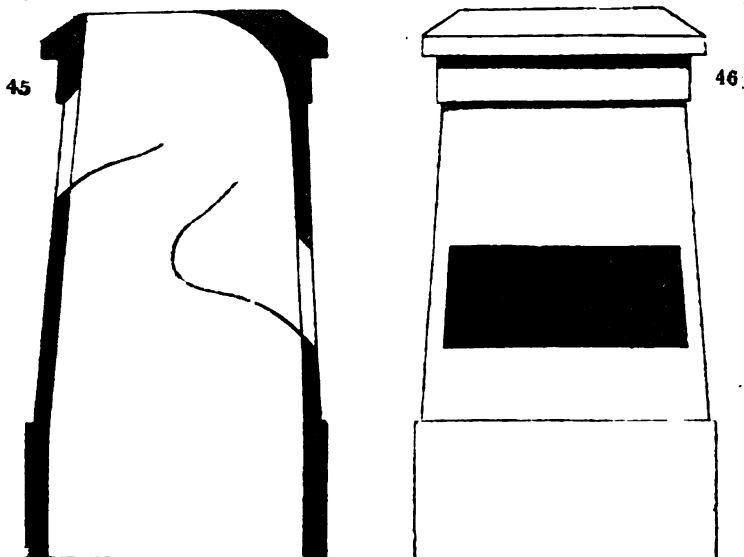
PLASTERER'S WORK. — The whole of the walls of the several apartments are to be plastered with a good coat of hair mortar, and set with fine stuff. The ceilings to be lathed, rendered, and set. The eaves to be plastered where necessary. The whole of the interior is to have two coats of white lime. Cement skirtings, 5 in. high, to be run in all those apartments which are to be paved.

GLAZIER'S WORK. — The sashes are to be glazed with second Nailsea crown glass, well puttied and secured.

PAINTER'S WORK. — The whole of the wood and ironwork usually painted is to have four coats of oil, and the best white lead, and to be finished in plain colours.

ART. VII. *How to cure a Smoky Chimney.* By WM. KENDALL, Esq.

How to cure a smoky chimney, being a question of so much importance, I presume any hint to forward the completion of so desirable an object will be acceptable to the readers of your Magazine. I accordingly send you the accompanying sketch (*fig. 45.* and *46.*) of a chimney which I saw at Pool Park, the seat of Lord Bagot, in Denbighshire, some time ago. A reference to the section (*fig. 45.*) will at once explain the principle upon which it is intended to act: *a* is the flue; and *b*, *c*, and *d* are apertures left for the escape of both wind and smoke; as when the wind blows from either side, or directly downwards, it will, it is presumed, escape from the opposite aperture, and leave the third aperture for the escape of smoke. *Fig. 46.* is an elevation of the chimney, showing the aperture at *d*. When I left Pool Park, these chimney-tops had



not been fixed ; and I have not since heard how they succeeded. They were of cast iron ; but they are so simple in construction, that they might be made either of artificial stone, or Parker's cement, and formed to suit any architectural design.

Kineton, Warwickshire, Dec. 7. 1835.

REVIEWS.

ART. I. *An Historical Essay on Architecture.* By the late Thomas Hope. Illustrated from drawings made by him in Italy and Germany. Royal 8vo, 2d edition. London, 1835.

(Continued from p. 88.)

CHAP. XV. *Destruction of Pagan Works of Art, which took place in the Early Days of Christianity, and Progress of the Use of Mosaic and other gaudy Decorations.* When the Romans conquered Greece, only a few of the principal works of art, which were too ponderous to be removed, were left in their appropriate situations. Thousands of articles were carried to Rome, and thousands of statues, groups, quadrigas, and other articles of brass, not belonging positively to the altar or to the temple, were melted down, and converted into gold, by the tyrant Maximinian ; and this work of destruction was completed, when Theodosius, by edict, ordered Pagan temples to be pulled down, and Pagan deities to be hurled from their pedestals.

“ The Pagans had fallen into an excessive fondness for the pleasures of the present life, from their uncertainty of a future existence. To the first Christians, the certainty of that which the Pagans grieved to doubt, coming with

all the forcible impression of a new discovery, had given too great a contempt for these pleasures; innocent when enjoyed in moderation, and which, as bestowed by Providence, and by Providence intended for man's solace, should, instead of being spurned, be received with gratitude. Clemens Alexandrinus, Tertullian, and all the first writers of Christianity, described the holy horror with which the first Christians abstained from hot baths, delicate food, musical instruments, elegant altars and furniture, and whatever else could gratify the senses: and this the more, from the literal acceptance of those words of our Saviour, by which he seemed to announce the destruction of the world as at hand. Thence they only sought to deserve the rewards, and to avoid the punishments, considered as impending, by the constant mortification of the senses; and would have thought their time wholly wasted upon works of art, so soon to be involved in the universal wreck.

"Nor were, during a certain period, the labours of the pencil and the chisel more in request for religious than for ornamental purposes. In the first church, chiefly composed of Jews and Gnostics, images were held in abhorrence: and it was not until the beginning of the fourth century, when a greater proportion of idolaters of Greece and Rome embraced the Christian faith, that they began to feel the want of those more sensible embodyings of the objects of their worship, to which they had been accustomed; and that images arose, wrought first by the pencil, and next in relief. About that period, indeed, a likeness of our Saviour, supposed to be miraculous, led the way to others confessedly produced by human hands."

(To be continued.)

ART. II. Literary Notices.

A PRACTICAL View of the Improvements effected in the Warming and Ventilation of Buildings, by the Introduction of the System of Warm-water Circulation through 1-in. Tubes, invented by Mr. A. M. Perkins, is preparing for immediate publication. — The work will contain ten zinc plates, consisting of plans and sections of some of the numerous public and private buildings warmed on this system; showing, minutely, the construction and arrangement of the different furnaces, tubes, &c.; also, methods of effecting, by a simple arrangement of the tubes, the perfect ventilation of public and private buildings, more particularly the latter, in which they may be introduced. By Charles James Richardson, Architect.

Designs for the proposed New Houses of Parliament, consisting of four plans, four geometrical elevations, one longitudinal and two transverse sections, with two perspective views; reduced to half the size of the originals, submitted to the Committee of Taste, December 1. 1835; designed and drawn on stone, by Peter Thompson, carpenter and builder; is announced for publication.

MISCELLANEOUS INTELLIGENCE.

ART. I. General Notices.

FILTERS for purifying Water have lately been much improved by Mr. Paine, plumber and glazier, Islington; they are of different sizes, according to the quantity of water required. The price of a moderate-sized one, supplying between 70 and 80 gallons per day, would be 2*l.* 10*s.* The stone used is of a particular kind, and so porous as to admit of the water soaking through it, and leaving its impurities behind. — *Tyro. Wilmington Square.*

Slate is becoming daily more extensively into use: it is being employed for paving the area in front of the New National Gallery, and also for churchyard memorials, instead of stone. It appears, from a paper read at a recent meeting of the members of the Architectural Society, that a slab of Welch slate, 1 in. in thickness, is equal in strength to a piece of Yorkshire stone of 6 in., or of Caithness, or Valencin, stone of 2 in., in thickness. — *Id.*

ART. II. *Domestic Notices.*

ENGLAND.

INSTITUTE of British Architects.—At the meeting of this Society, February 15., P. Papworth, Esq. in the chair, various presents from foreign societies and others were laid on the table. The Secretary, Mr. Donaldson, read a paper, by Mr. Gregory of Woolwich, on the slate quarries of Wales, and one from Mr. Jenkins on the same subject. C. Fowler, Esq., then explained the construction of the roof used by him to cover the Hungerford Fish-market, which is entirely of metal; the framing being of cast iron, and the covering of zinc; between which, in order to prevent galvanic action, there are several coatings of tar. The cost of this roof was 706*l*. A letter was read from M. Vandayer, a member of the French Institute, by which it appeared that a competition among the architects of Paris, similar, except in the amount of the prizes, to that which has just taken place in England respecting the new Houses of Parliament, has lately occurred in France. The occasion was a monument to be erected to the memory of the distinguished General Foy, for which purpose a million of francs was subscribed in a remarkably short period. The way in which a decision was made, is as follows. The drawings and models were first publicly exhibited for a week, and criticisms were eagerly sought from the public journals; the names of the candidates, meanwhile, being sedulously concealed. A commission was then appointed, consisting of architects, painters, &c., members of the Academy; afterwards, a second, of artists, not members of the Academy; and, ultimately, a selection was made from military men, high in esteem. These last, however, honourably declining to vote upon a subject they had not studied, the choice was left to the first two bodies; who, having the public opinion to assist their judgment, speedily came to a decision, with which nearly every body appears satisfied. One advantage of this plan is, to neutralise the effect of competing architects showing their designs, before sending them in, to numerous friends, which, though all perfectly fair; yet, as these friends may sometimes be among the judges themselves, or have friends among the judges, enables the judges to recognise the plans of individuals, and, of course, to incur the hazard of being more or less prejudiced. In short, all competition whatever ought to be made in public; and the criticisms of the public journals, and of every one capable of forming an opinion, ought to be courted. Even when a church, a workhouse, an almshouse, or any public building whatever, is to be erected, this ought to be the case; and the present seems to be a very suitable time for architects to make an impression on the public in this matter, and to destroy for ever that system of privacy and favouritism, which has hitherto prevailed in this country, to the great discouragement of all men who depended for advancement in the world on merit alone.

Architectural Society.—The monthly evening meeting of this Society was held on January 12. A number of interesting works of art were laid on the tables; and, amongst others, Mr. Hakewill's Sketches, illustrative of his Tour in Italy. These drawings excited considerable interest; for several of them were of scenes in the vicinity of Rome, and were executed with great taste. There were also some highly-finished architectural drawings of churches, and other buildings intended for religious purposes, in the south of Germany. The chair was taken by W. B. Clarke, Esq., the President of the Society. Mr. J. Blyth read a paper on the duties, difficulties, and responsibilities of the architectural profession; in which he dwelt on the difficulties an architect has to contend with in providing for the accommodation of persons having various kinds of wants; and complained that great injustice was often done, on this account, to professional men. At the conclusion of the lecture, the Chairman announced that a number of presents had been made to the Society since the last meeting; and, amongst others, some designs for the Houses of Parliament

in the years 1737 and 1799, from Sir J. Soane; three engravings of Peterborough Cathedral, from G. Moore, Esq.; and the plan, section, and elevation of Waterloo Bridge, from H. W. Hasley, Esq. — *M. C.*

Society of Arts. — At the evening meeting on January 12., Mr. Brunel delivered a lecture on his new mode of building arches without centring. In proof of the perfect nature of the principle, he stated that the arches constructed under the Thames Tunnel had stood unimpaired; whilst, by the immense pressure of the water, the iron shield had been torn as if by the force of gunpowder. At the conclusion of the lecture, Mr. Ainger made some observations on his new mode of ventilating buildings, and particularly as applicable to the new Houses of Parliament, which he illustrated by a practical model. Instead of the ordinary mode of admitting the current of air from below; in his plan it is admitted from above; in its descent, causing the air, which has been contaminated by respiration, and which, consequently, contains large quantities of carbonic acid and other mephitic gases, to flow out from the lower part of the room. — *M. C.*

Falling of a Funnel Chimney at Rotherhithe. — On the 29th of January last, after a stormy night, a lofty chimney, which had been erected on the premises of Messrs. Christmas and Hart, cement manufacturers, and finished only two days before, fell with tremendous force, crushing the roof of one of the adjoining houses, and burying several of the labourers in the ruins. The chimney was built by Mr. Brigg, a builder whose experience and ability are held in general repute in the neighbourhood. The exact height of the chimney was 72 ft. 3 in.; and the foundation was built upon a base of concrete, covered by a flagstone 6 ft. square, and about 4 in. in thickness. In the opinion of those who have viewed the ruins, it is considered that the soil was unfit to bear so weighty a superstructure; being itself, naturally, of a soft description, and rendered further insecure by the intersection, in many adjacent parts, of wide drains, or common sewers. It is further alleged, that the base itself was not sufficiently broad; as the top of the chimney was 4 ft. in circumference, and, of course, tapered only 2 ft. from its base to its mouth. Those who witnessed the fall of the lofty column say, that it swayed over, in one complete mass, from the base to the apex; increasing in its fearful velocity as it descended, but remaining wholly unbroken till it was snapped asunder by the concussion with the roof of the house. In the language of an intelligent person who witnessed the calamity, the chimney fell like a lofty pine tree suddenly uplifted by an earthquake. The flagstone on which the foundation was built was tilted up on its end nearly perpendicularly; a circumstance that seems strongly to show that the soil had not sufficient solidity for so high and weighty a structure.

In the evidence given at the coroner's inquest on the body of a labourer who was killed by this accident, one of the witnesses gave it as his opinion that the concrete on which the flagstone was laid had been prevented from setting properly by the frost; while others attributed the accident to an excavation which had been made at the base of the chimney to carry off the waste: but all agreed as to the narrowness of the base, and the unsoundness of the ground. The circumstance ought to serve as a warning to builders, and others, not to trust too much either to the compactness of the building, or the foundation of concrete; for, in this case, the compactness of the building, and the excellence of the workmanship, were evinced by the manner in which the chimney held together in one mass till it struck the house; and it was proved in evidence, that the depth of the concrete was greater than on ordinary occasions. The number of funnel chimneys now erecting in different parts of the country, generally in crowded manufacturing towns, and the fearful consequences that must follow the fall of any one of them, render this a subject of the deepest importance. — *J. A. D. London, Feb. 1836.*

Buckingham Palace. — The following account of the present state of the interior of Buckingham Palace is abridged from the *Morning Chronicle*: —

"The entrance-hall is ascended by a flight of steps open on steps from

either of three sides, at the top of which are numerous marble pillars of the Corinthian order, the caps of which are or-moulu chased in the highest perfection. To the right of the entrance-hall is a sculptured chimneypiece of statuary marble, of exquisite workmanship, in the upper part of which is to be placed a large clock. Opposite to the front door, at the top of the steps, is the sculpture-gallery, which has been considerably improved by the present architect, Mr. Blore, by the introduction of more light. This floor, as well as that of the entrance-hall, is inlaid with variegated marble.

“ From the centre of the gallery, and opposite to the entrance-door, is the principal entrance to the libraries, a suite of rooms right and left ; the first library consisting of a large bay-window, which faces the grand terrace at the back of the building leading to the pleasure-grounds. Great improvements have been made in the terrace by the introduction of abundance of light to the lower offices, which were previously almost in darkness. This room and the adjoining one are fitted up with white and gold bookcases, the doors of brass, with trellis panels ; the chimneypieces of massive Sienna marble, above which are glasses in carved and gilt frames, of plain design, but well adapted to the rooms, which are furnished with large and small chairs, tables, sofas, &c. At the extreme end of the libraries to the left is the private dining-room ; the walls are painted a pale green colour ; at each end are massive marble columns ; and the ceiling is panelled on a large scale. The three windows facing the entrance are hung with fine crimson cloth curtains, with deep silk fringe, supported by brass poles. The dining-tables are extensive, and of beautifully figured mahogany, with mahogany chairs, stuffed backs, and seats of morocco. The four side-tables are on beautifully carved legs ; the chimneypiece of Sienna marble ; and the grates correspond with those in the library, which are most tastefully executed. Next to the extreme end of the libraries to the right, is a small ante-room, with one window, the fittings and furniture to correspond with the libraries. Next to this is the Queen's sitting-room, the cornice of which is a handsome design, consisting of foliage and flowers in bold relief ; the wall covered with superb India paper, with gilt bamboo mouldings, executed by Messrs. Robson and Co. ; the chimneypiece of statuary marble, richly sculptured ; the grate and fender of modern and classical design ; and beautifully finished large chimney-glass, with carved and gilt frames. The two windows have figured silk curtains and draperies, with white and gold carved cornices. The chairs and sofas are richly carved and gilt, and covered with silk needlework, which was executed by the late Duchess of York. On each side of the fireplace are placed two bookcases of ebony and buhl, enriched with or-moulu ornaments.

“ The decorations of the Queen's waiting-room correspond with those of the last ; but the furniture is more simple : this opens on the Queen's private staircase. All the doors of these rooms are of fine Spanish mahogany, and specimens of the best workmanship : the floors are of oak. Leaving the centre part of the building, and passing the bath, the next apartment is a spacious sitting-room, with two windows magnificently hung with crimson curtains and draperies, and ornamented with rich carved and gilt cornices, and a chimney-glass, with carved and gilt frame, and modern and neat furniture. Beyond this is the Queen's private entrance, which is a handsome specimen of architecture of a semicircular form, entirely composed of marble : next to which are a small waiting-room and sitting-room, neatly furnished, and a suite of bed and dressing-rooms, fitted up in good taste.

“ On the left of the entrance-hall is a grand staircase, which is composed of statuary marble, from the first landing, branching right and left, and reaching the state apartments. The railing of this staircase is of a most chaste design of scroll foliage, executed in mosaic gold by Mr. Deville, with massive mahogany handrails. The four corners of the staircase are prepared to receive statues, above which is a frieze, consisting of figures in bold relief, the whole of which is lit by an extensive dome of richly cut glass of grand design of figures and foliage. From the centre is suspended a richly gilt chandelier.

From this you enter the grand room, which is small, but magnificent, the floor composed of East India satinwood, lit from the top with cut glass of rich design. You then enter the saloon, the walls of which are covered with green silk tabinet, interspersed with richly ornamented pilasters; the window-curtains of green and gold figured silk, with drapery and rich bullion fringe with carved and gilt cornices; the two chimneypieces of statuary marble, with female figures, terminating in foliage. In the centre of the frieze is a crown surmounted with a wreath. The grates and fenders, which are of superior manufacture, were supplied by Mr. Jeakes; the chimney-glasses are of very large dimensions, with very massive carved and gilt frames; the chairs and sofas are richly carved and gilt, and covered to correspond with the curtains; the tables are of ebony and gold, of new design, and beautifully finished. At each end of the room are two magnificent ebony cabinets, inlaid with precious stones, originally belonging to Carlton House. The ceiling of this room is ornamented in white and gold, from which are suspended three most costly lustres. The floor of the balcony, upon which the windows open, and which command a fine prospect through the triumphal arch down the avenue of trees in the park, is of marble, nearly 40 ft. square; but the light of the room is very much obstructed by the great projection of the portico. The next room is the throne-room, the ceiling of which is of the richest description; the cove is ornamented with shields, representing the quarters of the British arms, emblazoned. The frieze is composed of various subjects from English history in bold relief. The entrance to the recess intended for the throne consists of rich pilasters, supporting massive trusses, from the foliage of which start out female figures of exquisite design, supporting wreaths bearing a medallion, with the initials of George IV. The walls are covered with crimson silk tabinet, divided into compartments by richly ornamented pilasters, the whole of which, as well as the ceiling, is richly gilt. The doorway leading to the saloon is composed of statuary marble, of massive design, with ornamented cornice, bearing the bust of his present Majesty, and enriched with various trophies. The two chimneypieces are of statuary marble, the pilasters of which are beautifully sculptured in warlike trophies and frieze, representing two figures of Fame. The grates are enriched with fire-dogs, representing dragons of magnificent design and exquisite workmanship, and fenders and fire-irons to correspond. The chimney-glasses are of a large size, in massive carved and gilt frames, the centres of the frames of which represent a shield supporting a crown. These frames are a very fine specimen of modern art. The window cornices, which are carved and gilt, correspond with the glass frames; the curtains and draperies are of crimson silk velvet, English manufacture, lined with gold silk gimp, and deep fringe; the chairs, which are beautifully carved and gilt, are covered with crimson; the sofas, which are also carved and gilt, are likewise covered with crimson velvet. In the rear, intended for the throne, is placed a splendid buhl cabinet, inlaid with precious stones of large dimensions, supported by carved figures standing on a rich buhl plinth. The furniture in this room is chiefly of rich buhl-work. Opposite the windows, are two pair of folding doors leading to the picture-gallery, which is about 190 ft. in length, and about 40 ft. wide, lit from the top with cut glass; the walls are covered with drab flock paper; the doorways leading to the adjoining rooms are of massive and superior design, executed in marble, enriched with foliage vases, &c. There are five chimneypieces of statuary marble, supported by figures emblematical of the fine arts; the floor is of oak, ingeniously laid, representing various figures. This gallery is considered to be the finest in Europe.

"From the centre of the gallery a door opens into the bay-window drawing-room, occupying the centre of the building back and front, and directly over the bay-window library. It has a splendid dome, and a ceiling divided into lozenge panels, formed by circular lines, radiated from the centre, and which are enriched with the rose, thistle, and shamrock. At the four corners are the British arms emblazoned. At three sides of the room, above the cornice, are

groups of figures, enriched with foliage in very high relief; the cornice, which is particularly gorgeous, is supported by lapis lazuli columns with gilt Corinthian imitation caps. On each side of the room are two recesses, with semicircular tops, the backs of which are composed of looking-glass, round which is a light gold ornament. The two chimney-glasses are made to correspond; the chimneypieces are statuary marble, supported by sculptured female figures, from which is suspended a rich drapery. The frieze is decorated with shells and other ornaments; round the top of the shelf is a rich or-moulu gallery; the grates, fire-irons, and fenders are of rich design, executed in polished steel, and covered with gilt ornaments. The carved and gilt semicircular cornices for the five windows correspond with the tops of the glasses; the curtains and draperies are of crimson silk velvet, trimmed with gold-coloured silk gimp and fringe: in the centre of the bay-window stands a magnificent table, manufactured of china, on the top of which are represented the heads of the Cæsars, and various subjects relative to their history, formerly the property of Napoleon; on each side carved and gilt tripods and candelabra stand. In each recess are carved and gilt sofas, covered with crimson silk damask, and chairs to correspond. In the centre of this room is an Amboyna and gold loo-table of beautiful design and exquisite workmanship; and there are through the room smaller tables to correspond. The floor is composed of various inlaid fancy woods. From the centre of the dome is suspended a magnificent lustre. To the left of this is the south drawingroom, the ceiling of which is divided into compartments variously enriched; from this ceiling are suspended four magnificent lustres; at each end, above the cornice, are emblematical subjects beautifully sculptured, enriched with foliage; the cornice is gilt, as well as the ceiling, and is supported by numerous columns of large dimensions, with gilt Corinthian capitals; the walls are covered with rich gold and white silk damask, with carved and gilt border mouldings. Chimneypieces of statuary marble, beautifully enriched with foliage; on the top a large chimney-glass, with massive carved and gilt frame. The window cornices are made to correspond with the curtains and draperies of gold-coloured silk damask; the draperies are of an entirely new and tasteful design. Stoves, fire-irons, and fenders, furnished of a superior description. Very massive commodes, enriched with or-moulu buhl cabinets, fill the various recesses; the richly carved and gilt sofas and chairs are covered to correspond with the curtains; the loo and other tables exhibit the finest specimens of Amboyna wood, with carved and gilt pillars and feet; tripod and other stands, carved and gilt, are placed in various parts of the room. Next is the state dining-room, of very extensive dimensions; the ceiling richly ornamented in three compartments, from which hang three massive lustres; the walls are covered with brown and white figured silk damask; at the south end is a deep recess, in which is fixed a handsome mahogany sideboard, nearly 20 ft. in length, supported on four beautifully carved and bronzed sphynxes of exquisite workmanship; underneath are two mahogany cellarets; the opening of the recess is enriched with Sienna marble pilasters and statuary marble caps and bases. There are two statuary marble chimneypieces; frieze enriched with rose, thistle, and shamrock; the pilasters having deep panels, filled with bold sculptured emblematical figures; the grates, fire-irons, and fenders of suitable design. The door architraves are of statuary marble, with sunk panels filled with or-moulu, oak leaves, and acorns, the doors of which are of the finest Spanish mahogany, enriched with mosaic gold ornaments and mouldings, consisting of one principal panel of looking-glass, above which is an elaborately enriched panel, the centre of it representing a crown; the whole of the doors of the state apartments are of the same rich design, and beautifully manufactured; the sashes and window-shutters are of fine mahogany, enriched with mosaic gold mouldings; the window cornices, which are beautifully carved and gilt, are of an entirely new and grand design; the curtains and draperies are of rich crimson silk damask, trimmed with rich gimp and deep-silk fringe: these, together with the window cornices, produce a grand effect. Over these three

windows are three other windows of a circular form, each composed of one piece of cut glass, bearing the initials W. R., and a crown surrounded with a laurel branch. The side-tables are on richly carved standards; the mahogany dining-tables are about 60 ft. long, of the finest species of wood, on carved legs; the mahogany chairs, of good design, are covered with crimson morocco; the floor is of oak, with rich scroll foliage border of variegated woods, presenting a fine specimen of flooring.

"On the right of the bow drawingroom, is the north drawingroom, the ceiling of which is more simple than that of the south, but beautifully enriched and gilt. From the ceiling are suspended three rich lustres; round the room, under the ceiling, is a rich frieze of figures in high relief; below this is a cornice corresponding with that of the south, supported by numerous pilasters; in the centre of the caps, which are of gold, is a crown in colours; the furnishing and decorations of this room are the same as those of the south drawingroom, with the exception of a second fire-place, over which is placed a superb mirror: the carpet of this, as well as the carpets of the whole of the state apartments, are of Axminster manufacture, supplied by Messrs. Bell and Watson. This room leads directly to the Queen's sitting-room, the ceiling of which is of three compartments. From the centre hangs a splendid lustre; the walls are covered with crimson flock paper, with an enriched gilt bordered moulding. Chimney-piece of statuary marble, the frieze of which is beautifully enriched with or-noulu, supported by handsome bronze figures. The grate, fender, and fire-irons are of the richest design and execution. Over this chimney-piece is a large glass, in a richly carved and gilt frame. The window cornices are made to correspond with curtains and draperies of gold and white silk damask, trimmed with rich gimp and silk fringe, the draperies being particularly magnificent. A pair of couches, and the chairs, are richly carved and gilt, and covered *en suite* with the curtains. The tables and cabinets are of rich buhl-work. Next to this is the Queen's dressing-room, the walls of which are covered with green flock paper. The window cornice is carved and gilt, and the curtains and draperies are decorated with deep silk fringe. The chimney-piece is of statuary marble, inlaid with Sienna. The chimney-glass is in a carved and gilt frame; a mahogany cabinet, beautifully enriched with or-moulu, of the finest specimen of manufacture. The furniture is principally of fine mahogany and buhl. Adjoining this is the state bed-room, the walls corresponding with the dressing-room, as are also the cornices and curtains. At the end of this room is a recess, in which is placed the state bed, of fine mahogany, surrounded with curtains on brass poles, commodes, and wardrobes of rich tortoiseshell, ebony, and brass buhl-work.

"Entering the north wing, it is necessary to cross a passage to the King's dressing-room and wardrobe, which are most elegantly fitted up with mahogany furniture. This room adjoins the Queen's wardrobe, which is a large room, beautifully situated, with one large bay window; the wardrobe, which is about 20 ft. in length, exhibits one of the very finest specimens of mahogany, design, and workmanship: the tables and chairs are of mahogany. The eight following rooms in this wing consist of sitting, bed, and dressing-rooms for ladies in waiting, handsomely furnished. These rooms, and the whole of the state apartments, libraries, also the private apartments of their Majesties, are entirely furnished by Messrs. Dowbiggin and Co., who have displayed great taste in style and execution.

"On the south end of the picture gallery is the south wing. A spacious waiting-room, in connexion with the state dining-room, is conveniently fitted up with mahogany cases and tables. Adjoining this is the armoury, a spacious octagon room, lit from the roof, and of beautiful architectural design. The two chimney-pieces, of statuary marble, are richly sculptured in warlike trophies. The pilasters contain sculptured busts of George IV. Mahogany cases are fitted round to receive the grand collection of armoury originally in Carlton House. The remaining rooms in this wing are fitted up for domestic offices. The upper rooms, in the centre building and wings, are fitted up as bed-rooms for the domestics, in a most convenient manner.

"The state kitchen, on the basement floor, which is a spacious octagon room, situated under the armoury, is most conveniently fitted up with iron tables, plate-warmers, &c., which are to be heated by steam. The range and ovens are conveniently constructed."

Buckingham Palace. — The following opinion of the interior of this building is from the work of one of the most intelligent foreigners who has ever visited this country; viz. M. Von Raumer: — "June 20. Yesterday, in company with Mr. D., and several other persons, I visited Buckingham House, the King's new Palace, in St. James's Park. Many objections might be made to the external arrangement and proportion, though its extent, and the colonnade, gives it an air of grandeur. But what shall I say of the interior? I have never seen any thing that might be pronounced, in every respect, more of a total failure: in fact, it is said that the King, though immense sums have been expended, is so ill satisfied with it, that he has no mind to take up his residence in it when the unhappy edifice shall be finished; and the dislike appears to me to be very natural. I, myself, should not care to have a free residence in it; for I should vex myself all the day long at the fantastic mixture of every style of architecture and decorations; the absence of all pure taste; the total want of an eye for measure and proportion. Even the great entrance-hall does not answer its object, because the principal staircase is on one side, and an immense space, which has scarcely any light, seems to extend before you at the entrance, to no purpose whatever. The grand apartments on the principal story are adorned with pillars: but what kind of pillars are they? partly red, like raw sausages; partly blue, like blue starch; bad imitations of marble, of which there is none; standing upon blocks, such as art rejects, to support one hardly knows what. Then, in the next apartment, no pillars, but pilasters; these pilasters without base or capital; and those with a capital, and the basis foolishly cut away. In the same apartment, fragments of Egypt, Greece, Etruria, Rome, and the middle ages, all confusedly mingled together; the doors, windows, and chimneypieces in such incorrect proportions, that even the most unpractised eye must be offended. The spaces unskilfully divided, broken, insulated; the doors sometimes in the centre, sometimes in the corner; nay, in one room, there are three doors, differing in height and breadth; over the doors, in some apartments, bas-reliefs and sculptures, where pigmies and Brobdignagians pell mell together: people from two to six feet high line admirably together. The smaller figures, especially, have such miserable spider legs and arms, that one would fancy they had been starved in a time of scarcity, and were come to the King's Palace to fatten themselves. The picture gallery is highly spoken of: I allow it is large; and the Gothic branches depending from the half-vaulted ceilings make a certain impression. On the other hand, this imitation of Henry VII.'s Chapel is out of its place here. . . . The doors and windows, again, are in no proper proportion to the whole; the immensely high wall cannot be hung with paintings; and the light, coming from above from two sides, is false, insufficient, and broken by the architectural decorations. Thus the palace stands, as a very *dear* proof that wealth, without knowledge of the art, and taste, cannot effect so much as moderate means, supported by sound judgment: a palace, according to Bentham's theory of art, in which the doctrine of beauty and taste is idle superstition, which vanishes before his test of utility. But of what use is this palace? The best thing would be, for Aladdin, with his magic lamp, to come and remove it into an African desert. Then travellers might go in pilgrimage to it, and learned men at home might puzzle their brains over their descriptions and drawings, wondering in what a curious state of civilisation and taste the unknown people, who built in such a style, must have lived; and how such deviations from all rule were to be explained! If these learned men entered into discussion on the subject, the nation would be, if not justified, at least excused, and its liberal grants of money be alleged in its favour; but the King, and, above all, the architect, would be justly condemned for the violation of all the rules of art and taste." (*Raumer's England, as quoted in the*

Athenæum, Feb. 13. 1836.) We are most happy to quote the above criticism from a foreign author, rather than from a British one; because such an opinion, from one among ourselves, would have been considered, by many persons, as made in the spirit of party. A German, however, is much more likely to be partial to English taste, than prejudiced against it. The truth is, that in this country such a feeling as that of taste for the fine arts exercising itself freely and on rational principles can hardly be said to exist. Precedent is every thing; and the most absurd combinations, or, at least, combinations which at a glance show an ignorance of fundamental principles, continually obtrude themselves on our view. To give a familiar instance, which every one can understand, in the palace referred to, and in many other buildings, while the columns have richly carved capitals, and the frieze is, perhaps, ornamented with bas-reliefs, all or some of the windows have not even architraves. This is bringing together the extreme of poverty and the extreme of richness; but it is the result of copying parts, without thinking of their combination as a whole. — *Cond.*

Holborn Level. — We noticed, in p. 40., our objections to the plan proposed for establishing a public company, having for its avowed object the remedying of this long-acknowledged evil. So absurd a plan as the one alluded to we thought had no chance of ever being carried into execution; and, therefore, we said but little respecting it. Finding, however, that a company has been formed, and that a bill is in progress in Parliament, we consider it our duty to repeat our reasons for considering the plan as altogether objectionable, on account of its imperfection, and as only partially remedying the evil. According to this plan, it is proposed to leave the hill exactly as it is, so that carriages of every kind, either going to Farringdon Street from Holborn or Skinner Street, or coming from Farringdon Street to either of these streets, will have the same descent or ascent as they have at present. In what, then, does the improvement consist? Simply in providing a level line for persons passing from Holborn to Newgate Street. Now, admitting that the greater number of stage coaches and other carriages do pass in this direction, yet it must be allowed that a very great number also pass through Holborn and Skinner Street to and from Farringdon Street, and Farringdon Market; and that this number will be greatly increased when the plan now in progress, of continuing Farringdon Street to the New Road, is carried into execution. As a proof that the projectors of the plan objected to think that a very considerable number of persons will still go up and down these hills, a principal part of the profits to be derived by the company is proposed to be obtained from the rent of shops and cellars under the viaduct! which shops and cellars can, of course, only be approached by the very hills, the inconvenience attending the ascent and descent of which the company is to be established to remedy! Why adopt a partial plan, and leave a portion of the public to suffer the inconveniences complained of, through future generations, when, by adopting the plan referred to (p. 40.), or some other of a similar nature, the principal feature of which consists in raising the north end of Farringdon Street and lowering the highest part of Holborn and Skinner Street, so as to reduce the hills to a slope of 1 in 36, by which all, whether inhabitants or passengers, would be equally benefited. We do hope that Parliament will pause before they pass a bill for any project of this kind which may be brought before them. We are, however, happy to see the subject agitated, hoping that some good plan will, at no very distant period, be fixed on and carried into effect; but, whatever it may be, we trust that, in designing it, the benefit of *all* will be taken into consideration, and not that of only a few. — *Cond.*

City of London School. — The first stone of this new school was laid by Lord Brougham, on the 21st of October last year, with the usual ceremony. The site of this new building is Honey Lane Market, in the rear of the houses facing Bow church; the school, which is to accommodate 400 scholars, is in the old English style of architecture, from the designs, and under the super-

intendence of Mr. J. B. Bunning, and is expected to cost 11,500*l.* — *Tyro. Wilmington Square.*

Marylebone Almshouses. — Several plans, specifications, &c., with estimates, have been gratuitously offered by architects for the erection of almshouses, for the aged and the unfortunate residing in the parish of Marylebone. A freehold piece of ground has been given by Colonel Eyre for the purpose, pleasantly situated on Primrose Hill. — *Id.*

A new Church is being erected in Vincent Square, Vauxhall Road. The dilapidated almshouses, now standing in York Street, are to be taken down, and rebuilt adjoining the new church. — *Id.*

A new Dissenters' Chapel, on the right-hand side of Barnsbury Street, Islington, has just been completed : the suitableness of the style of architecture I shall leave your readers to determine upon. The front, which is of brick, faces the north-east ; on the ground story, in the centre, is a large circular-headed window ; and on each side of it is a square cement entrance, projecting from the front. The entrances have a door in the centre, with two Grecian Doric pilasters on each side, finished with a regular entablature ; on the sides is a return pilaster, with a small window. Over these entrances is a small semicircular window, with a reveal round the same. On the gallery story are three circular-headed windows ; and over these is a triangular pediment, with a circular window in the centre. The cornices, blocking-courses, &c., which are continued round the south-east and south-west sides of the chapel, are in cement ; on the south-east side are six unusually long circular-headed windows. Adjoining, at the back of the chapel, is a small building including the vestry, &c. The cost of this erection is 1500*l.* — *Id.*

A Scotch Chapel, in the Gothic, or pointed, style of architecture, facing Duncan Terrace, Islington, has recently been completed. — *Id.*

Islington New Literary and Scientific Institution. — A building is about to be erected near Islington New Church, consisting of a commodious theatre for the delivery of lectures ; and a library, with reading and conversation rooms. The rooms the Society now occupy are only temporary, and are found too small, the present number of members being about 800. — *Id.*

Islington New Church. — (See Vol. II. p. 465.) The following list of the expenses for building, fitting up, &c., this church, may not be uninteresting to your professional readers : —

Mr. W. King, for building church, and enclosing church	}	£3112 17 3
ground, per contract		
Mr. C. Barry's commission	-	155 12 0
Law charges	-	58 9 0
Consecration expenses	-	30 17 4
Planting church-ground	-	16 0 0
Printing and books	-	38 7 0
		<hr/>
		£3407 2 7

King William Street, Strand. — A fanciful pillar, executed in stone, supporting a large handsome lamp, has recently been erected in the centre of the crossway from the British Fire Office to the opposite corner of King William Street. Near to the pillar are two octangular granite posts, about 2 ft. 6 in. to 3 ft. in height, in two divisions, having a curb-stone against each, protecting them from the carriages. — *Id.*

New Goldsmiths' Hall. — Some ornamental lamp-posts have lately been put up in front of the new Goldsmiths' Hall. They are of cast iron, and mounted upon stone pedestals : they have fancy capitals, formed of small leaves, supporting a large lamp ; the lower part of the shafts, resting upon the pedestals, have four bold curled leaves. It is singular to observe the effect produced by paying attention to those minor conveniencies in buildings which, not a very long time ago, were seldom, if ever, taken into consideration.

This is strikingly exemplified in this new building; in which attention has been paid by the architect (Philip Hardwick, Esq.) to the lamp-posts already mentioned; to the railing enclosing the Hall; and even to the scrapers. — *Id.*

The Blue-Coat School, or Christ's Hospital. — Some houses in Newgate Street, facing Warwick Lane, have recently been pulled down, throwing open the south front of this Hall, which was erected in 1826, from the designs of John Shaw, Esq., to all passengers of that popular thoroughfare. The opening is enclosed by a neat iron railing, with gates, which are set back a few feet from the line of the houses in the street. On each side of the entrance gates is a decorated pier, in which are introduced, with other ornaments, small models of the boys in their peculiar dresses. The house on the left-hand side of this opening is just completed, and displays an elegant specimen of the old English style as applied to street architecture: three houses, on the right-hand side, are now being taken down; and, when this is done, a corresponding building is to be there erected. — *Id.*

St. Thomas's Hospital. — Part of a new hospital, in the Grecian style of architecture, adjoining the present one, which is situated at the corner of Duke Street, Borough, and Wellington Street, London Bridge, is now being completed. — *Id.*

Licensed Victuallers' School. — The first stone of this building, which is to be erected from the designs, and under the superintendence, of Mr. Ross, architect, in Kennington Lane, by the Licensed Victuallers' Charity, was laid by Viscount Melbourne, on the 21st of January, with the usual ceremony. Messrs. Webb, builders, have engaged to perform the various works at the cost of 14,000*l.* — *Id.*

Cambridgeshire, Cambridge. — A new chapel is in contemplation, which is to be erected upon a piece of ground purchased for the purpose, and situated near the Willow Walk, leading to Barnwell. In the latter place, first-rate houses, of a very handsome description, have been lately completed; and, early in the spring, it is expected that many more will be built. — *Id.*

Herefordshire — Hereford. — The unsightly school, which so long disfigured Hereford Cathedral, and blocked up the cloisters, has been removed, principally through the exertions of the Dean; and the good taste of that gentleman is prompting him to a work that, from the hasty glance I took of it, is, I think, likely to be a great improvement. By removing the filling up of two arches behind the communion-table, a view will be laid open, from the choir, of one of the most beautiful windows in England, that is now seldom seen, as it is parted off from the rest of the building by a wall, and the enclosed space, being used as a library, is, of course, not generally open to the public. — *R. V. July 27. 1835.*

Hertfordshire. — Hatfield House. — Part of this venerable mansion, a generally acknowledged first-rate specimen of Elizabethan architecture, was destroyed by fire on the 27th of November last year; being, however, insured in the Sun Fire Office, to a large amount, it will be restored without much difficulty: this is to be performed by Messrs. Webb, builders to the fire office, at the cost of 15,000*l.* — *Tyro. Wilmington Square.*

Lancashire — Manchester. — *Fall of the Wall banking the River Irwell.* The Commissioners of Police at Manchester have, for the last two or three years, been applying the funds at their command to the opening of a magnificent thoroughfare from the Exchange in that town to the new road leading to Bury, Burnley, &c. To do this it was necessary to erect an immense stone wall on the banks of the river Irwell, the average height of which was to be 50 ft. About 120 yards of this had been completed some time, and the workmen were proceeding with the remainder (the height of the unfinished wall varying from 40 ft. to about 15 ft.), when it fell, in one mass, into the river Irwell; and the consequences were, the total destruction of the works on the opposite side of the river (which is 40 yards wide), belonging to Messrs. Collier and Co., at

tended with the loss of life, and serious injury, to various individuals. The injury done to the buildings on the opposite side of the river may be thus philosophically accounted for, although neither a single brick nor a piece of stone, that formed part of the wall, could by any possibility have come in contact with them. A wall, 200 ft. long and 7 ft. thick, falling in one connected mass into the river, the amazing concussion of the air, and the force with which such an immense mass of materials drove both the air and the water against the opposite buildings, caused their destruction. The roof was not only torn off, but the buildings were literally thrown down; and, of course, all the machinery was destroyed. Various causes have been assigned for the falling of the wall. Some assert that the wall itself was too slender, and that it ought to have been at least 10 ft. thick, considering its altitude, to enable it to resist the great quantity of loose earth which had necessarily been put down at the back of it to complete the road. Others maintain, that the wall was abundantly strong, but that the foundations were insufficient; and, that these giving way, the wall, in a mass, necessarily gave way also. No blame attaches to the mason, who remonstrated strongly against so large a quantity of earth being placed at the back of the wall before it had properly set. — *S. T. Manchester, Feb. 1. 1836.*

Surrey. — *Dorking Church.* — The foundation-stone of a new church, erecting by subscription, was laid, in the first week of November last year, by the Bishop of Winchester. The tower of the old church has not been removed, but is to have the necessary alterations made to accord with the new nave, which is to cost 4000*l.*, using the old materials. — *Tyro. Wilmington Square.*

Brighton. — Within these few years the town of Brighton has been much enlarged: it was originally confined to the west cliff, but has now been extended to the east cliff, which is called Kemp Town. The principal feature in this new town is a large square, having three sides lined with very handsome first-rate houses; many of them are in an unfinished state, but will be shortly completed. On the ground story are well-proportioned columns, of the Ionic order, supporting an ambulatory, or walking, gallery, from which the inhabitants of each house have an extensive view of the sea, which lines the fourth side of the square, and is enclosed by an iron railing. — *Id.*

Wiltshire. — *Trowbridge Chapel.* — The Tabernacle Chapel, at Trowbridge, has been closed for the purpose of making extensive alterations to it: besides painting, &c., galleries have been added. The chapel was reopened on the 18th of November last year. — *Id.*

Worcestershire — *Worcester.* — Our Natural History Museum and County Courts proceed rapidly, and early in August the foundation of a new church is to be laid in the blockhouse. A cemetery is also talked of. — *R. V. Worcester, July 27.*

Malvern. — Your friend and correspondent, Mr. Varden, is about to build a number of new houses, or rather villas, in this beautiful village for Edward Foley, Esq., M. P. You, no doubt, know the village of Malvern, and the manner in which it stretches up the hill. The situation is one of the finest in the kingdom; but the modern villas built on it are by no means worthy of the site. I hope Mr. Varden will be more successful. The ground on which the new houses are to be built is considerably elevated, commanding extensive views: it slopes gently to the east, and is backed by a steep lofty range of hills, partly covered with houses, and partly in an uncultivated state. A new road is to be laid out; and it is to be placed so that there may be an ascent from it towards the houses, by which means their architectural importance will be increased. Many of them are to be occupied as lodging-houses; but they will require to have large and handsome rooms, commanding fine prospects, not only of the principal view, but of the road, as many who will be likely to occupy them will, no doubt, prefer seeing a few passengers to the finest view in the world; and, if they did not overlook a road, they would consider them dull. — *E. D. Malvern, Dec. 1835.*

ART. III. Retrospective Criticism.

ERRATA in Censor's Reply to Mr. Perkins. (p. 42.) — In p. 44., for "t" read "t"; for "e", read "t": line 17., for "expansion from", read "expression for"; line 22., for "surfaces", read "temperatures". P. 45., last line but one, for "running", read "necessary". P. 46., in the eighth column of the table line 1., for "0·9", read "·09"; line 16., for "straight tube 45", read "straight tube 70"; line 18., for "right-angled tube 70", read "right-angled tube 45"; line 22., for "approximation", read "approximations".

Mr. Coles's Remarks on G. B. W.'s original Design for a Roof. (p. 95.) — I hasten to reply to these remarks upon my original design for a roof. Mr. Coles commences by giving your readers the valuable information, that it is a "combination of what are technically called the king-post and queen-post trusses;" but it is not, he thinks, "the best that could be adopted." Taking for granted that I assert it to be so, which I never did, he proceeds to point out the impracticability of my truss, and, further, to show which is the "best that could be adopted;" viz. his own. His objection to my design is, that the king-post truss derives its whole support from the side or queen-post trusses. Now, I see no reason why the queens should not be the principal supports of the truss: indeed, it is what I intended in making the design; and I introduced the lower king-post truss for additional strength; but, were the span less, it might be dispensed with entirely. If Mr. Coles will turn to *Nicholson's Carpentry*, he will find that, in the truss of old Drury Lane Theatre, the construction of which is somewhat similar to his and mine, there was no king-post in the lower or principal division of the truss; but that a clear space of 32 ft. was obtained between the two queen-posts, which alone supported the upper beam, over which were three king-post trusses. Now, it is extremely probable that, had the queen-posts of this roof failed "in their destined purpose," the kings would, as Mr. Coles, with a happy mixture of sagacity and humour, observes, have been "humbled in the dust:" but they stood for several years; and, but for their unfortunate destruction by fire, would, in all probability, be standing now. In return for Mr. Coles's valuable information, I will communicate to him a secret of equal importance and truth. Were the key-stone to "fail in its destined purpose," the rest of the arch would meet with the same ignominious and terrible fate to which he dooms my king-posts; or, were a story-post, supporting a bressummer, to give way, it is not at all unreasonable to suppose that the latter would share its downfall. In fact, I might give him many pieces of practical information of this nature (as valuable and as sensible as his own); but, as he says respecting the timbers, "I presume I need not describe them, as they are so commonly understood." By the by, although the names of the timbers may be understood by inspecting his sketch, the scantlings cannot; and, as Mr. Coles furnishes neither figures nor scale, it is not quite easy to ascertain: nor am I at all disposed to take for granted the truth of his assertion, that "the weight, and, consequently, cost, of materials" in his truss is less than of those necessary for the construction of mine. Until he furnishes these very material particulars for a fair comparison between his design and mine, he must excuse my doubting whether, as his namesake at Charing Cross states, "*Coles's truss is best.*" — G. B. W. London, February 1. 1836.

G. B. W.'s Design for the Truss of a Roof of large Span. (Vol. II. p. 536.; and Vol. III. p. 95.) — It appears to me your correspondent G. B. W. is not fully acquainted with the construction of roofs on large spans, for the following reasons: first, the truss he has given is in two heights; therefore, the want of continuation in the principal rafters renders it weak and unfit to sustain the cross strains, occasioned by sudden gusts and currents, to which all roofs are frequently liable; and, secondly, the struts are by no means properly placed, so as to meet the pressure of the principal rafters, purlines, common rafters, and covering; and thirdly, the corbels are so placed as to afford but little

strength to the tie-beam end. The truss of Old Drury, mentioned by your correspondent, has no reference to the one he has given. The accompanying truss (*fig. 47.*) has been suggested by an experience of many years' practice; and it is so plain, I conceive, as to require but little explanation. The dimensions of the timbers are given below, and the weight the roof is calculated to sustain permanently. It will be seen, the tie-beam ends are secured into a cast-iron chair at each end, properly bolted thereto, and into the oak wall-plates by two shanks cast on each of them. I shall be most glad to learn, through the medium of your Magazine, any improvements that can be suggested, or of any defects it may have. — *Thos. Cook. Welford Place, Leicester, Jan. 23. 1836.*

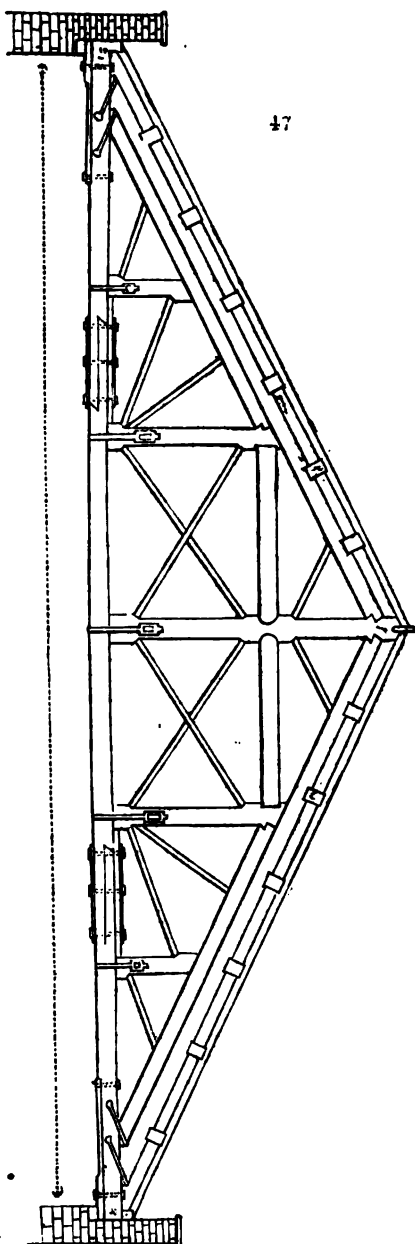
Table of Scantlings, best Memel Crown.

Tie-beam	-	-	15 × 12
Crown and queen-posts	12 × 9		
Straining-beam	-	-	12 × 9
Principal rafters	-	-	12 × 9
Assistant ditto	-	-	12 × 9
Common ditto	-	-	3½ × 2½
Purlines	-	-	8 × 5
Straining-sill	-	-	12 × 2½
Ridge	-	-	6 × 2
Struts	10 × 3½ and (a a)	10 × 4	

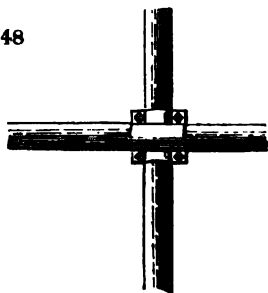
The crown and queen-posts to be of good, dry, old oak. The tie-beam will carry 19½ tons; the weight of the truss, boarding and covering, is nearly 11 tons; therefore, for the ceiling floor, ceiling, and any other extraneous weights, upwards of 8½ tons are allowed.

Mr. F. Lush's Plan for fastening Scaffold Poles. — Your correspondent, Mr. F. Lush, must pardon a critique on his holdfasts for scaffolds. He advises that the "clip," or plate, should be ¾ in. thick; whereas, if it were shortened in the laps, so as merely to

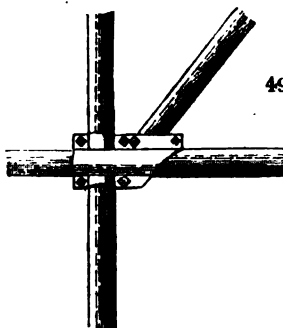
admit of the screw-nuts turning clear, a plate of ½ in. thick would be sufficient, as in *fig. 48.*; this will produce a saving in first cost that may lead to the adoption of the plan, as it would admit of boiler-makers' "snips" being used. In *fig. 49.* I



48



49



have shown a method of fastening a cross brace. Another case remains, where ropes are used in scaffolding; that is, the perpendicular splice, in such buildings as may be too high for one length of poles. (See Vol. I. p. 198.) These splices take up 20 ft. of the length of each pole: the iron "clip," and attention to breaking the joints, so that they do not all occur on one floor, or story, would go far to shorten these long splices. In some cases the upper poles might be bored, to receive the tops of the lower poles; they would then have a perpendicular bearing, but would be more difficult to raise and lower. It must be borne in mind, in scaffolding, as in the construction of centres, that the best and most scientific mode is not always to be adopted; but that which will answer the purpose with the least sacrifice of the materials. — *Wm. Thorold. Norwich, Jan. 11. 1836.*

Mode of securing Scaffold Poles. (p. 30.) — On showing my article on a method for securing scaffold poles (p. 30.) to some of my friends, I found that some of them thought that the holdfast would be in danger of slipping down by the weight and pressure of the ledger pole, together with the planks, and the ledged boards for the building materials; but, on my giving a further explanation of it to them, and showing how much it could be tightened by the screw, they were soon convinced to the contrary. If it is recollected that the holdfast retains its position by a strong staple at the top and bottom, secured by four suitable nuts, it will appear clear that it is much more capable of bearing the weight of the poles and materials than ropes. — *Frederick Lush. Hoxton, January 21. 1836.*

Doors to Rooms should be hung on the Side nearest the Fire. (Vol. I. p. 201. and p. 317.) — Your intelligent correspondent, Mr. Milne, very much to my astonishment, attacks a position of mine, which you had inserted (Vol. I. p. 201.), and dignified with the title of "Architectural Maxim." From what he says, I cannot help thinking that he has confounded the terms axiom and maxim together: but, to come to the point in dispute, I mean to maintain my assertion, and I will endeavour to do so in a philosophical manner. First, then, I have observed that, when doors are not hinged on the side nearest the fireplace, the smoke is drawn out every time they are used; secondly, I think I can account for this circumstance in a very simple way: the air that is displaced by the motion of the door is supplied by that which is near the fire; and, consequently, a vacuum is created, or the current of air that is feeding the fire is interrupted, and part of the air that had entered the chimney returns with the smoke to supply its place, or, in common parlance, it "puffs out." In the case of the door being hinged on the opposite side, the vacuum is supplied either by the expansion of the whole of the air in the room, or by some current, without disturbing the current of air that flows to the fire. — *T. W. Banks, near Barnsley, Sept. 21. 1835.*

THE ARCHITECTURAL MAGAZINE.

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ORIGINAL COMMUNICATIONS.

ART. I. *On Effect in Architecture.* From the French of QUATREMERRE DE QUINCY. By P.

IN works of art, *effect* is a quality, of which the property is, to give a lustre to other qualities; and to attract or fix the eye and the attention of the beholder upon them, by displaying something striking. This quality is not considered as belonging to art, because it makes itself also felt and sought after in the works of nature; and in them, as in the works of art, it is best defined by its opposites. Thus there are some human countenances without effect: they are those which, notwithstanding their regularity of feature and beauty of complexion, want, either in the eyes, colour, or air, a certain vivacity, which gives to the face a look of intelligence, feeling, and expression.

In painting, effect is an indispensable quality: the opposite of effect is monotony. In nature, there are many beautiful sites, which to a painter would be deficient in those contrasted lines and masses, which the eye especially seeks for in the works of art. These are sites, or situations, without effect. The same may be said of objects either deprived of light, or placed under a meridian sun: in both cases they want that contrast of light and shade, which can alone produce a greater or less degree of effect. These observations are merely preliminary, and are intended to define, by obvious comparisons, the nature and species of the quality called effect.

Effect, in Architecture, may be considered under a certain abstract, but at the same time material, sense, as an assemblage of projections and hollow spaces, or smooth and rugged surfaces, which contain materials for more than one kind of contrast, and consequently include combinations capable of producing more than one species of effect. Contrasts of light and shade spring from these varied combinations, and aid in producing effect; and it is certain that a uniform mass of even surfaces, without hollow or projection, could produce no other impression than

that of monotony, which is the same thing as want of effect. A mass presenting one smooth unvaried surface, however imposing it may be from its size, is incapable of producing more than one kind of idea in the mind; and thus, after the first general impression has been given, the sight of it, exciting only repetitions of the same idea, becomes wearisome from its monotony. The Egyptian pyramids are grand from their size; but nothing can be imagined more wearisome than for an architect to be condemned to view a pyramid constantly from one point of view. No new ideas would arise in his mind, and no new combinations of forms would suggest themselves, and he might as profitably, in an architectural point of view, gaze on the barren sands of the desert, or the calm surface of the Dead Sea. Very different would be the mental position of the same individual living opposite to the façade of the Louvre, the colonnade of St. Peter's, or the peristyle of the Pantheon: he could every day receive new impressions, and could with difficulty exhaust the store of combinations to which the effect of these works would give rise.

There are two distinct kinds of effect produced by architecture, which may be attributed to two distinct causes: the one is dependent on composition, and the other on execution.

The effect that depends on composition is that which results from the varied use of what are called hollows and projections in an edifice. These must, of course, be in a great measure regulated by the variety and harmonious combinations of the lines of the plan: but it is the masses forming the elevation that produce the effect; and which, by multiplying the points of sight, multiply also the impressions transmitted from the eye to the mind, and thus give rise to new combinations of ideas. It is by this variety of aspect that an edifice becomes a sort of theatre, the scenes of which appear to change, either according to the different points of sight from which it is contemplated, or to the varied disposition of the light which falls differently upon the various hollows and projections of the edifice at different periods of the day.

Nothing, as some authors have observed, can demonstrate plainer the nature of effect in architecture, than the different impressions produced upon the mind by columns and pilasters. "It is not," observes Le Roy, "the real size of an edifice that determines its effect, but the idea that it gives of size." All persons in the habit of viewing buildings must have observed that the façade of the Pantheon affects us more strongly than that of St. Peter's at Rome, although the columns of the portico are considerably thicker and larger in the latter than in the former. This difference arises from the circumstance of the columns of St. Peter's being attached to the wall, and thus rendered inca-

pable of producing the varied effect that springs from the depth of the peristyle at the Pantheon.

Architectural effect, in the composition of buildings, results from the composition creating in us two kinds of sensations: the one partaking of a sort of still life, as in a picture, the immovable objects of which cannot vary, however we may alter our position; and the other participating in a species of animated nature, which, by a change in our situation, appears itself to change, and in reality does so, with respect to the different aspects of the same edifice. It also depends upon a moderate use of the objects of variety of which the art has it in its power to dispose. If, as we have already shown, an entirely smooth surface, void of all details, leaves our eyes and our minds in a state of complete inaction; so the exact contrary, consisting of an extreme multitude of parts and details one upon another, by exciting a confusion of ideas, gives us too much trouble to examine and judge, and, by an ostentatious endeavour to create effect, totally fails in its object.

With respect to decoration, effect should confine itself to a limited use of the means of variety. Gothic artists, in their frontispieces of churches, have multiplied details to excess; but, by going too far, they have often failed in effect. Too many compartments, as well as too few, equally destroy effect. Compartments certainly assist the action of sight; but too many cause the eye to turn away from fatigue, and too few, from indifference. If, then, effect is a quality intended, in architectural composition, to gratify the spectator, and to give him pleasure in observation, the action of this quality will be annulled either by an excess or by a deficiency of details.

The second sort of effect is that which depends upon execution, understanding by that word nothing that relates to the science, or even to the details, of construction, but the means, apparently purely material, which are employed to give to each part its proper form and value. This kind of effect is one of which the plans and drawings belonging to construction can neither fix the measure nor prescribe the mode. Some people imagine that, to produce great effect by means of execution in the members of architecture, or in the masses, details, or profile of an edifice, they must be left by the tool of the workman in something like a neglected or rough state, which would not bear a complete finish; and which, for example, in decorative figures, partakes of the nature of outlines or rough sketches. The best works of the Greeks give the most formal contradiction to this practice. There is no architecture more designed for, or more calculated to produce, effect, than the Greek Doric temples; and yet no where are the profiles and details set forth with more boldness and energy. All the details of those grand

masses, which, viewed together, produce so bold an effect, are found, when we examine them near, to be chiseled and finished with the utmost precision; and the whole is arranged so as to produce the greatest possible impression, without the appearance of any pretension to effect. To a massive capital succeeds a fine and slender fillet; after a profound hollow, comes a slight and feeble projection; and thus effect is produced, precisely because it appears never to have been intended, or even thought of.

Greek architecture, in the effect of its largest masses, has followed the same system as that pursued by the Greek sculptors in the execution of their finest and most enormous colossal statues. The moderns, on the contrary, in almost every thing, when they want to produce effect, endeavour to make it all effect: this is the most certain way of not attaining their end.

The various decorators, who succeeded each other in St. Peter's, have exaggerated in this manner some of the figures on the archivolts of the nave. Without doubt, the execution of ornaments intended to be viewed from a distance should have a certain degree of boldness to give them effect; but this boldness should not preclude either delicacy or neatness of workmanship. The remains of antiquity furnish us with models of the kind of effect of execution which is most suitable to ornaments so placed. In them, also, we may observe that the effect of architectural execution, like that of all other qualities, exists in a certain medium between extremes; that is to say, in an alternate use of what is styled, in music, the *piano* and the *forte*.

The word effect may also be understood in a more general sense, as simply signifying the result of what the works of nature and art cause us to experience. When we speak of judging of the effect of a work, on an architectural plan, we mean nothing more than foreseeing what it will be, or how it will appear when finished. Nothing, however, is more hazardous than such pre-conclusions, when there is nothing more than simple delineation to found conjecture upon. It was formerly the custom to make a little model in relief of all buildings of any importance; and this is the only true way of prejudging the impressions that will be made by the finished buildings, whether those which depend upon the action of light, or those which are the result of a connexion between the projections, distributed members, and profiles of an edifice, with its total mass, or whole.

When Paul III. wished to finish the Farnesian Palace, which San Gallo had commenced, and carried up to the entablement, he called in Michael Angelo, and fully approved of the design presented to him by that celebrated artist. Notwithstanding this, however, and notwithstanding the confidence which a great mind always feels in its own resources, Michael Angelo was not

satisfied. He knew how deceptive all calculations are that are intended to estimate the effect of great things by small ones; and he knew that even the laws of optics are not sufficient to enable an artist to judge, from a mere drawing, of the effect that will be produced by masses and details. Even a small model he did not consider sufficient; but he made an angle of the palace itself serve as a model to exhibit the grandeur of his design.

We ought to allow that, in general, effect, when understood to signify the result of architectural combinations, particularly the impression that the character of each erection may produce, can scarcely, in simple designs, be more than guessed at, even by professors of the art: still less can those who are unacquainted with it, that is to say, the public, or the patrons themselves, pass judgment upon reduced representations, which are only to the projected edifice what a sketch is to a colossus.

ART. II. *Architectural Pedantry.* By CANDIDUS.

EVERY one is aware that the doctrines of Vitruvius have lately been impugned very unsparingly, to the very great scandal of many who have, nevertheless, entered into no satisfactory, or even plausible, defence of that "venerable" authority; and no one has attacked these doctrines more ably than Mr. Hosking, in his *Treatise on Building and Architecture*, in the *Encyclopædia Britannica*. Essentially anti-Vitruvian, in the utmost force of the term, instead of laudably taking for granted the opinions hitherto transmitted from one writer to another, Mr. Hosking indulges in a spirit of examination as obstinate as it is dangerous. Very far is he from being dazzled by celebrity, however extensive it may be, if it appears to him to rest chiefly upon tradition, and, although hitherto unquestioned, to be in itself anything but unquestionable. Even some of those who may agree with him in the main, may, perhaps, be of opinion that, upon certain points, he has gone rather too far, or, at least, expressed himself in stronger, not to say more unguarded, terms than it behoved him. Even that I entirely agree with him is more than I can affirm: there are several, and those, too, by no means unimportant, matters in which I differ from him essentially; yet, as regards his originality, his vigour of expression, and the earnestness with which he ventures to think for himself, for these he deserves unfeigned thanks. Owing to these qualities, the subject itself acquires, in his hands, a freshness and animation that could have been scarcely anticipated, particularly

in a treatise of this nature, where the writer is confined to a hackneyed track, and within limits that preclude discursive criticism.

Most of those who have written upon the art have chiefly shown their ingenuity in inventing and keeping up a mystical cant, most barrenly imaginative, and far less akin to sound reasoning than to Pope Innocent's explanation of the enigmatical significance of the four rings he sent as a present to King John; who, by the by, has been greatly belied if he at all profited by the so-typified cardinal virtues. Of about as little avail to the architect are those occult virtues, those talismanic proportions, those numerical harmonies, which are supposed to be inherent in the ancient orders, — their indefeasable prerogative under the most contradictory circumstances. It is something worse than impertinence to insist upon our admiring arithmetically, or, rather, upon our admiring the various items, which, when cast up, will be found to produce a total altogether different from what is assumed.

Menzel (see *Versuch einer Darstellung*, &c., von Carl August Menzel; Berlin, 1832), a recent German writer, who may be considered a decided anti-Vitruvianist, remarks that it is astonishing, that for so many centuries people should have looked at such creations of fancy as the ancient orders, as little more than matters of numbers and computation. To imagine that the inventors, or, we should rather say, the perfecters, of the Grecian orders aimed at, or even thought of, certain arithmetical coincidences subsequently verified, would be preposterous enough, even were it not contradicted by their practice, which exhibits a latitude most uncomfortable and provoking to those who think that a code of art might be drawn up much in the same manner as the building act; who have not an idea beyond their infallible "Elegant Extracts" of architecture; and, in short, who are systematisers "upon principle," without system. With men of this stamp, whether they be practitioners or critics, rules are every thing. Provided they are but adhered to, nothing can go wrong: genius and taste may be dispensed with, and, indeed, ought to be, as very unmanageable and refractory subjects; while the dullest and most trivial things may pass muster under favour of those rules which constitute what is significantly enough termed *regular* architecture.

Never yet was anything truly great or valuable in art achieved by dint of mere rules: the utmost they can do is to prevent positive errors. By no means, however, does it follow that the observance of them will guard against all vices, because there must ever be more or less of which rules will stop short; and here it is that originality discovers, while imbecility betrays, itself. It is not criticism, but sheer quackery, which solicits

admiration for mere beauties of routine, and which looks only at parts and fragments, without forming any estimate of the whole. A very poor painting may exhibit tints, here and there, that, considered merely as colours, may be exceedingly fine; and an unwashed palette may display hues equal to any that we meet with in Titian or Rubens: yet colours are one thing, and colouring another; nor do random and unmeaning accidents of the kind alluded to excite any pleasure. Were it, too, not for the cant that has been kept up on one side, and the ignorance that has blinded people on the other, the world would long ago have found out that the same holds good in regard to architecture as to the other arts, although not precisely in the same degree. This prevalent, and, for the most part, utter ignorance in regard to the powers of architecture as one of the fine arts, has favoured a grovelling pettifogging system of criticism, which has thoroughly drugged us with nostrums of one kind or other. No matter what particular style be advocated, the quackery made use of for the purpose is pretty much the same. In unqualified unquestioning bigotry, the admirer of Ictinus yields not one jot to the idolater of Palladio; the patriotic venerator of our old English architecture is not a whit more liberal than the most dogged worshipper of Vitruvius; while his very patriotism serves to dignify his one-sided obstinacy. Differ as they may from each other, they all agree in admiring by rote, and in discountenancing any attempt to step beyond certain limits they have been pleased to set up. So strongly, indeed, have they fortified their respective systems with circumvallations of rules, that we may be excused for imagining them to have been devised for the special protection of stupidity; and that, out of favour to this latter quality, genius itself must not be allowed to advance one step out of the regular track, lest its blundering imitators should lose themselves among quagmires. Another good reason, too, for granting no such liberty is, that it would occasion sad perplexity to the critics, who would be obliged to extend, if not entirely to revise and remodel, their statutes. It must be admitted, however, that these wholesome and well-intentioned regulations do not work altogether as they ought to do: genius, indeed, is made to keep pace with mediocrity; yet imbecility always contrives to betray itself by some blunder, by some egregious piece of *gaucherie*, notwithstanding all the training and prompting it receives. Architects of this stamp (and their name is Legion) are not unfrequently misled, even by their very affectation of purity, into the most extravagant solecisms imaginable; perpetually misquoting and misapplying their authorities, and sneaking about in their stolen peacocks' feathers, in the most unpeacock-like manner imaginable.

There are so many contingencies, all requiring to be taken

into consideration, that what may be a merit under one set of circumstances, may be utterly the reverse under another. Our modern architectural legislators ought, therefore, to be either far more despotic, or far more liberal, than they actually are; and, unless they choose to proscribe all private judgment, they ought to allow that independence of previous authorities which is the privilege of every other art. Instead of this, they only permit us to err by rule, and to be inconsistent according to the most approved etiquette. To deviate from the received proportions of any one of the orders would be little short of sacrilege: the whole fraternity would be up in arms against the unlucky wight who should be guilty of such profanity: but to apply an order so that it shall be utterly at variance with every thing in the design, and so as to destroy all general harmony of proportions, seems to be perfectly consistent with the staunchest orthodoxy. Provided every thing, taken individually, be *selon les règles*, it matters not how intolerably bad the compound itself may prove: it is enough that it ought to be excellent, the several ingredients being all very palatable in themselves. I shall, perhaps, be thought to be here indulging somewhat too freely in caricature. Alas! I feel that this representation of the case falls far short of the actual absurdities that have been perpetrated under the sanction of the legitimate school. I am sometimes tempted to believe myself labouring under some obstinate mental hallucination, in fancying that architecture addresses itself to the eye rather than ear, since so many seem to be of quite a contrary opinion, and to suppose that it is the ear alone which takes cognizance of the beauties of this art. Why, else, are we stunned with praises bestowed upon things, the merit of which lies not in any discernible qualities, but in the names and words employed to describe them, and in beauties, the exquisite proportions of which are too subtle to be detected by our visual organs, and can be made obvious only by arithmetic? According to my own wayward notions on the subject, the most important question to be put, as concerns the æsthetic value of any production in architecture, is not whether it possesses this or that particular quality, whether it conforms with this or that rule, or answers to any specific denomination; but whether it exhibits that final quality, upon which the efficacy of all the others depends: in one word, does it captivate us by its *effect*? I do not mean by "effect" merely that which catches the eye at the first glance, but that which will bear to be studied, and, in fact, which cannot else be fairly appreciated, it being itself the result of study and mind, even when the particular nature of it may have originally been suggested to the artist by some fortuitous hint.

Here, then, we may obtain a kind of anchorage, which will

prevent our being driven to and fro, in restless uncertainty, amid shifting theories and dogmas. As in all the other arts, in poetry and music, as well as painting and sculpture, so also in this, effect is the soul, at least the manifestation of it; and, provided there be this important requisite, it is a matter of very minor consideration in what precise mode it is obtained; whether it be owing to this or that particular quality, or whether it be derived from something too indefinite, or too peculiar, to admit of being expressed by a term of its own. A very notable discovery this! it will be said, which, putting us off with a mere verbal explanation, leaves us quite as far from the mark as ever; since we have yet to learn how this so much desired combination of qualities, comprehended under the word effect, may be attained. Undeniably such is, if not altogether, for the most part the case; nevertheless, it is a considerable point gained, inasmuch as it clears away not a few obstacles and stumbling-blocks lying in the path of criticism, and directs us at once as to what we ought to look to. Should there be any still so unreasonably reasonable as to insist that it is of little avail to be aware that is the grand desideratum in architecture, except it can also be shown wherein it consists, and how it may invariably be secured, we must remind them that at least the difficulty here is no greater than what attends all the other fine arts, poetry and music inclusive. At all events, to know that it is this aggregate quality (effect), and not the individual ones of which it is made up, which stamps a work of architecture with sterling value, helps us to get rid of sundry dangerous fallacies, and to establish a sound principle in lieu of them. It is something to be directed into a right road, although it depends upon our own exertions to advance in it.

Precisely is it because effect lies far beyond the reach of all technical methods and auxiliary rules that it is so rare of achievement, and so highly prized when accomplished. For the same reason, too, it is impossible to explain it theoretically with any tolerable degree of accuracy. In any given example, where the quality manifests itself, we can be at no loss to discover on what it depends; and such particular effect may afterwards be copied as often as we please: beyond this, criticism can aid us nothing, except in the way of vain conjecture; its province is the present and the past, and not the future. It is for the artist to draw upon the latter; for it would not be more absurd to suppose that Vitruvius himself could have formed an idea of a Gothic cathedral, than that criticism can predestine the yet embryo powers of art, or fathom the depths of its possibilities.

Rarely will artistical effect in architecture be found to arise from any one single quality; more frequently may it be traced,

not only to several concurrent ones, but to qualities and circumstances skilfully opposed to each other. How many contradictions, for instance, oftentimes go to make up general harmony ! How much complexity is requisite, in order to produce what truly deserves the name of simplicity ! Nearly similar effects, again, may be produced by very opposite causes ; while seemingly similar modes of treatment may be attended with anything but like results. Neither, when the impression wrought upon us is the strongest, does it follow that the source of it is most obvious : so that, overlooking the principal cause, we may ascribe it to some far less influential one. Hence, an imitation will generally fall short of a good original, even in those parts wherein the model is professedly copied : the slightest oversight in working the problem may lead us farther and farther from its solution. Even in architecture, although the hand alone will do more than in any other art, the mind must also do something. Why have no copies from the *Venus de' Medici*, or from the works of Raphael, ever yet rivalled the originals ? Because, however expert and talented they might be, the artists who have attempted to produce such fac-similes have never felt the *afflatus* that possessed the authors themselves : they have worked after other people's ideas. I do not go so far as to affirm that the same remark will hold entirely good in regard to architecture, where merely mechanical imitation can accomplish so much more than in the sister arts ; but even here there must be some evidence of feeling. "And pray, Mr. ———," once said a very clever friend of mine, and one by no means without enthusiasm for his profession, "what do you mean by *feeling*, in architecture ?" The question, at all times rather an embarrassing one, was in this instance particularly so, not to say mortifying, coming, as it did, from one who should hardly have needed any explanation. Little can I hope, therefore, that the term will prove more intelligible to others ; except it be that its meaning will be better caught by those who are free from the prejudices resulting from a systematic mode of training, and a species of discipline which rather induces them to acquiesce in what others have determined, than stimulates them to nicer enquiries.

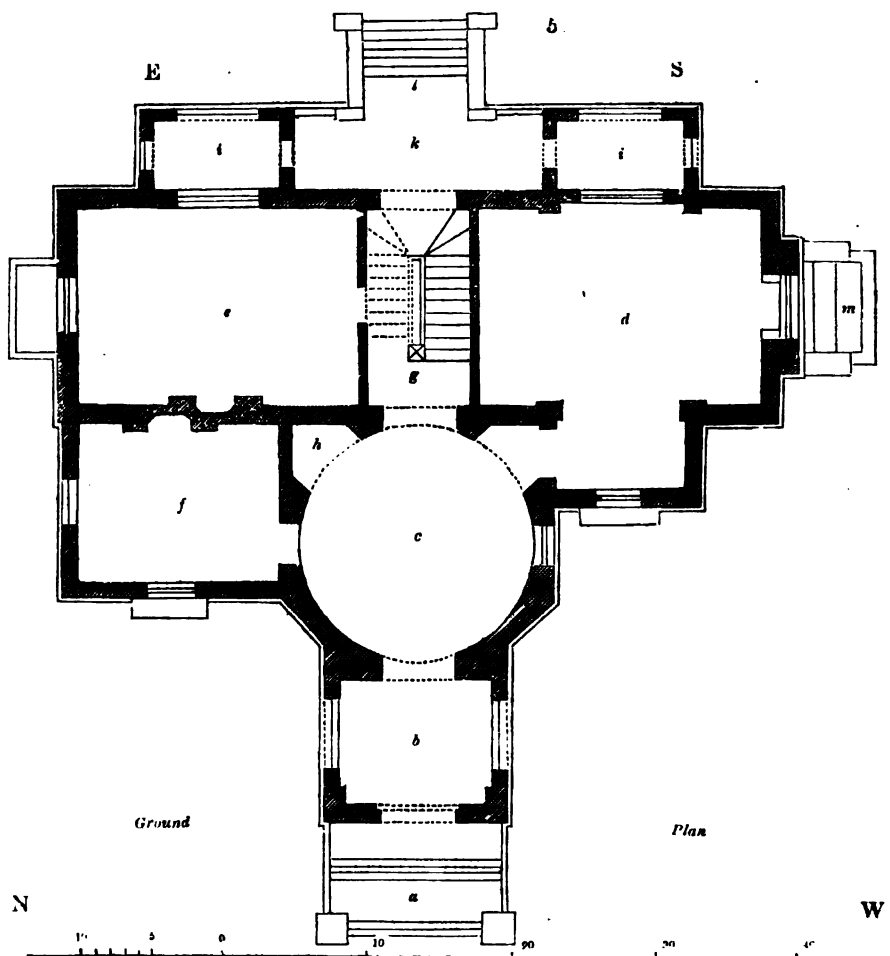
Feeling may be explained, for it cannot be said to be defined, to be that clear perception of his ideas, and consciousness of his aim, which enable the artist to express them intelligibly to others, and to impress the workings of his own mind on his productions. Some, however, may be apprehensive that so very vague a guide, answerable to no positive restrictions, will be more apt to mislead than not ; and that it may serve as an excuse for any caprice. I think very differently, being of opinion that feeling is the very best security against caprice,

although we admit that it certainly is liable to prove refractory against the merely conventional. If we are capricious in matters of art, it is not because we obey feeling too implicitly, but because we have no feeling at all to direct us, whenever we attempt to deviate from the beaten track.

ART. III. *Design for a Suburban Villa with Two Acres of Ground.*
By E. B. LAMB, Esq., Architect.

THE ground plan of the villa is shown in *fig. 50*. In this *fig.*, *a a* are steps leading to the porch (*b*). It will be seen by the elevation of the entrance front (*fig. 55.*), that the arches on each side of the door are enclosed with an iron railing, capped with Yorkshire stone, the ends of which are let into the reveals of the arch. The porch is paved; and the roof is covered with large slates, or slabs of stone, upon fir joists, wrought, and open to the view. These slabs should be laid at such an inclination as to carry off the water; and the joints should be filled in with cement or white lead; or, more effectually to keep out the wet, one course of plain tiles might be laid over the slates, and bedded in cement; taking care to cover the joints of the slates; and, if expense were not an object, ornamental paving-tiles might be used instead of the ordinary plain tiles; or two courses of slates alone might; which last would certainly make the best job. Of course, it will be necessary to run a cement flashing (if I may so call it) or fillet round, to prevent the weather from getting into the brickwork. Round the under side of this covering, inside the porch, instead of running a many-moulded cornice, I would merely project a course of bricks, herring-bone-wise, with another course under this, only projecting half an inch from the face of the wall. The porch should not be plastered at all; but the brickwork should be well and neatly jointed, and the arches, and all other decorative parts throughout the building, should be executed with white bricks (except where stone or other materials are mentioned); and the plain walls should be built with what are called seconds. The verandas, balconies, and all other weather projections, might be executed in the same way as the porch.

From the porch we enter the hall (*fig. 50. c*) through folding-doors, glazed with large squares of glass: there might be rich stained glass borders in these doors; and the window on the right of the entrance should have stained or figured glass. The hall ceiling should have a deep cove, with a very few mouldings under it, of rather a bold character, neither Gothic nor Grecian, but of a form well studied to receive the full benefit of the light



and shade; the ceiling might be paneled, and many appropriate ornaments might adorn it, without going to Greece for the honeysuckle, or stripping the genealogical tree for heraldic devices. The colour of the ceiling I should prefer being rather dark, the walls of a lighter hue, and the floor still lighter; but these tones should be so graduated as to soften off, as it were, into each other by almost imperceptible stages; when I say the tones should be thus, I mean the general tones of the whole apartment; for, as the mouldings in the ceiling and walls will produce dark shadows, and, occasionally, strong lights, the floor must also partake of the same character; for which purpose, oil-cloth, or a

pavement of two-coloured stones, or inlaid woods, when not too dark, would be proper. I am aware that this method will not be approved by many, nay, I may almost say most, people: they have been so accustomed to see white ceilings, dark walls, and darker floors, that it will be very difficult to turn the long-cherished custom upside down: but let us do it by degrees, and, if the dark colour is very objectionable, make it lighter — any thing but white. A large white ceiling, with an equally large portion of light in a room, completely destroys the effect of any piece of furniture, which has only small portions of white in it; what is it makes a room look cold and cheerless when there are no curtains? The glaring light, and white ceiling; this every person must have seen: but I am going out of the hall before I have finished describing it. On the right of the entrance door, and adjoining the window, is an arched entrance to the drawing-room: here would be a little triangular bit of ceiling, into which I would not forget to put its proper ornaments. How many and diversified might these be! A few minutes' thought would create so many pleasing designs to attract the eye and satisfy the mind at the same time, that I wonder antiquities should be ransacked for them. Opposite this entrance is a corresponding recess, well suited for a candelabrum, a figure, or an elegant pedestal and glass vase for flowers; or it might be used for an umbrella-stand, or for hats and coats: the only objection to this would be its being opposite to the drawingroom entrance; on this account, perhaps, the best situations for hat and coat stands would be on each side of the entrance door.

We will now leave the hall for the drawingroom (*fig. 50. d.*). As this room is appropriated to all the elegant refinements of the present day, it should be rather light in its general character; at the same time preserving the principles of light and shade, and gradation of tones before mentioned. There are three windows in this room, one of which is over the fireplace, and from it is seen the flower-garden; that near the entrance commands a view of the entrance drive, and scenery in that direction; the other opens to the balcony, which is well stocked with plants, diffusing delightful perfumes and brilliant colours, which cannot fail to produce agreeable sensations in the mind. The windows of this room should all have some stained and ornamental glass; and the ceiling should be paneled and ornamented to as great an extent as would be consistent with the size of the house. The styles of the ceiling should be coloured oak, or painted in imitation of some ornamental English wood; the panels might be coloured of any lighter colour; and, if there were flowers, they might be picked out in two colours. I particularly mention that the ceiling should be in imitation of wood, as there would be a flat space of considerable extent; and an imitation of stone in it,

or any colour which could be mistaken for stone, would be contrary to the principles of architecture, and would, consequently, produce a disagreeable effect. The cornice should be rather deep, and the large beams might terminate on an ornamental bracket: this would add to the appearance of strength, and produce variety without heaviness. The pilasters, which are shown on the plan, should go right up to the cornice, and would appear to support the largest beams, which should run in this direction across the room. The walls might be papered with paper of a lively pattern, but not too light; and a gold moulding would add very much to the effect of the paper. Opposite the window, over the fireplace, should be a large mirror, so as to reflect the flower-garden, &c. It will be quite unnecessary to say any thing about the furniture, except the curtains, which are so connected with the architecture of the room, that their arrangement is of some importance. Between the pilasters, by the large window, there would be very little difficulty in hanging curtains, as these pilasters form a termination to a cornice, a pole, or piece of straight fluted drapery with a deep fringe: there would be, also, room for curtain pins or hooks. The opposite window could be managed much in the same way; carrying the cornice or drapery to the return walls. Over the fireplace there could be no drapery except at the top; but the shutters should be lined with plates of looking-glass, so that, when closed, they would reflect the objects in the room; and, if the boxings were splayed, and glass fixed in, the variety would be extremely pleasing.

We will now enter the staircase (*fig. 50. g.*). The newel of the stairs should be a candelabrum, if one is not used in the hall; the stairs might have rounded nosings; the balusters should be ornamental cast iron bronzed, and the handrail should be capped with mahogany; but, if this should be considered too expensive, bold turned balusters would cost considerably less.

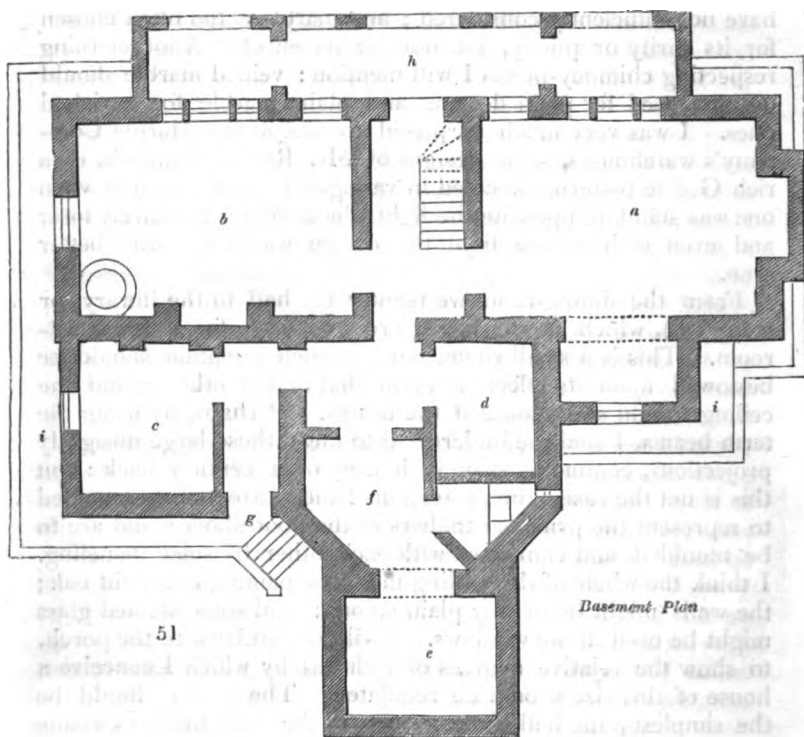
From the stairs we enter the dining-room (*fig. 50. e.*). The entrance is placed here to be near the kitchen stairs, and to be away from the drawingroom entrance; which entrance is sufficiently far from it to prevent any disagreeable smells from the kitchen. The dining-room has two windows; one opening to the veranda (*i*), and the other looking to the lawn, &c.: these windows should have some stained glass. The general colour of this room should be of a rich tone; and the chimney-piece should be of such a marble as would, in colour, harmonise with the rest of the room; as, in fact, all the chimney-pieces in the principal rooms should do. It is a very common thing for persons to order a white marble chimney-piece for the drawingroom, and a black, or dark, marble for the dining-room, without considering what will be the effect when in contrast with the walls and other parts of the room: this is a point which architects

have not sufficiently considered ; and marble is too often chosen for its rarity or purity, but not for its effect. Another thing respecting chimney-pieces I will mention : veined marble should only be used for plain designs, and plain marble for enriched ones. I was very much surprised to see, at the Marble Company's warehouses, some designs of Mr. Robert Smirke's, of a rich Gothic pattern, executed in variegated marble, so that when one was standing opposite the light, the design was entirely lost ; and even with a side light the design was very little better seen.

From the dining-room we reenter the hall to the library, or study (*f*), which might, if required, be used for a breakfast-room. This is a small room, but as much attention should be bestowed upon its effect as upon that of the others ; and the ceiling should show some of the beams. Perhaps, by using the term beams, I shall be understood to mean those large unsightly projections, commonly seen in houses of a century back ; but this is not the case ; the projections I mean are merely intended to represent the principal timbers of the floor above ; and are to be moulded, and connected with each other by small paneling. I think the whole of this ceiling might be painted of a light oak ; the walls might be of any plain colour ; and some stained glass might be used in the windows. I will just go back to the porch, to show the relative degrees of richness by which I conceive a house of this size should be regulated. The porch should be the simplest ; the hall the next step, at the same time possessing some of the characteristics of each room, so that the contrast is not too violent when entering those rooms ; the breakfast-room, or library, the next ; the dining-room the next ; and the drawing-room the most decorated and most cheerful. These degrees are best marked by the furniture ; but they ought to be studied also by the architect.

I will now leave the ground floor for the basement plan (*fig. 51.*), in which *a* is the kitchen ; *b*, the washhouse and scullery ; *c*, the pantry ; *d*, the wine-cellar ; *e*, the coal-cellar ; *f*, the wood-cellar ; *g*, the back entrance ; *h*, the area under the veranda ; *i i*, the area round the house.

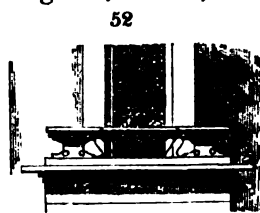
Very few remarks will suffice for this plan. First, all drains should be outside the house, and in such situations as to be easily accessible ; the area round the house, for the purpose of keeping the basement dry, should be at least 1 ft. below the kitchen floor, and should be covered with Yorkshire paving, except where light was required ; and the walls should be built battering, to prevent the earth from pressing them in. The kitchen floor should be boarded, and all the others paved with stone, tiles, or bricks. Stone is best for the floor of the washhouse and pantry, and for the passage ; and it should be laid upon brick

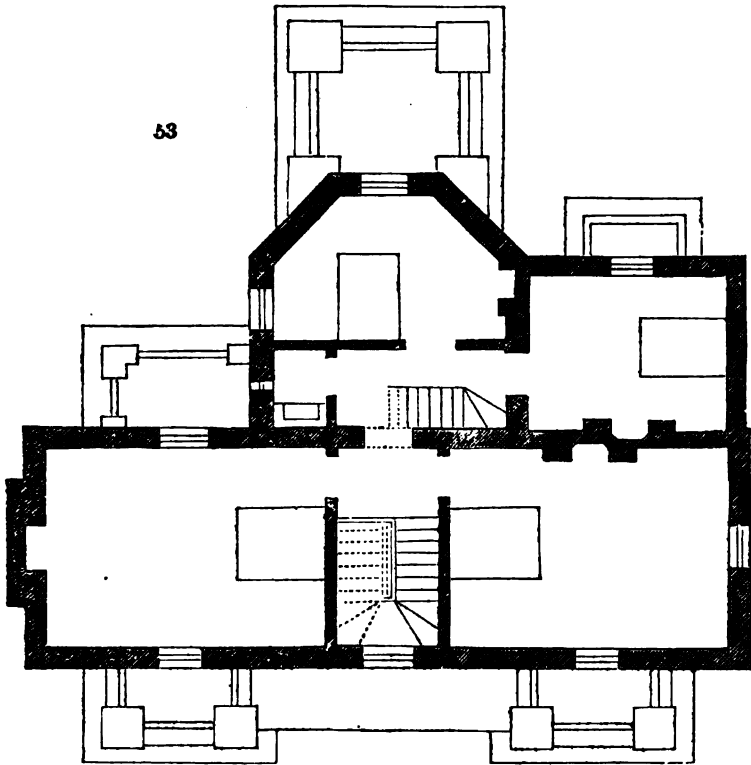


withs. A free circulation of air should be admitted under the floor, and paving by means of air-bricks, which would prevent what is called dry rot in the timbers, and damp from rising in the walls.

The chamber plan (*fig. 53.*) shows four bed-rooms, &c. The windows to these rooms are hung folding, and open on balconies, which are seen in the elevations.

Balconies are delightful additions to a bed-room: they also give a cheerful effect to the exterior of the house; and, when furnished with plants, nothing is more delightful, I think, than opening the window directly you get out of bed, and enjoying the fresh air, and the sweet scent of the flowers at the same time. In these balconies it will be seen that at the angles *a a a a*, *fig. 52.*, and as shown in the elevations, are pedestals, or tables, which might be executed in cement, and between them a light iron railing, as exhibited more distinctly in *fig. 52.* These tables would be proper places for vases, flower-pots, or



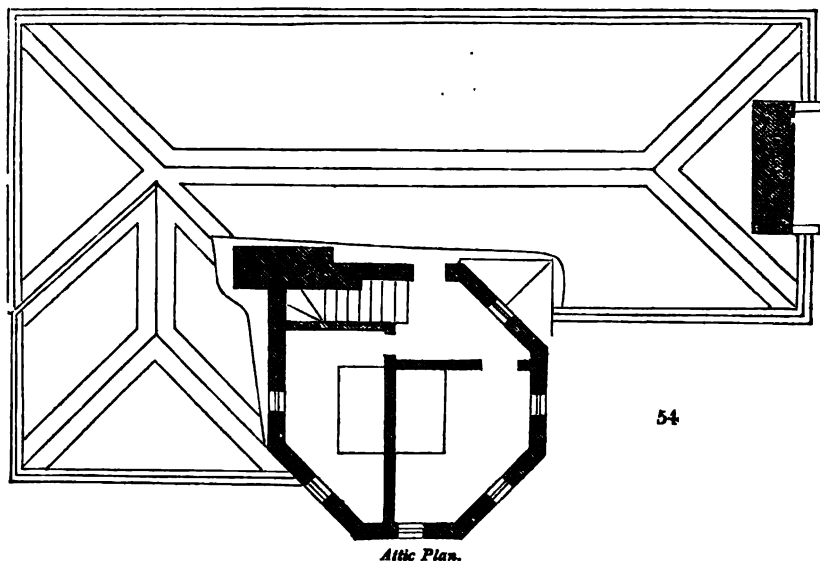


Ground Plan.

figures, if they were in sitting postures : but, as many stone, or artificial stone, figures would not agree with this brick building, great care should be taken in their introduction.

The attic plan (*fig. 54.*) shows two rooms in the tower, and the roofs, gutters, and chimney-stacks. The roofs should be covered with large slates ; and, when they are new, if they were stained with oil, lime, and lamp-black, so as to take off the rawness of the material, they might be made to harmonise with the walls. Time is the best stainer ; but, as harmony is as requisite to architecture as it is to music, we must study to obtain it artificially, if we cannot get it naturally.

The ridges, hips, and valleys of the roof must be covered with lead. If there were any tiles of a better form and colour than the plain and pan-tiles, and of a neutral character, I should prefer tile covering ; but our tile-makers never think of producing any thing new, unless they have an order to do so ; and they are content to get their money by the old and well-known forms, without attempting to stretch their imaginations, or their purse-strings, for new ones.



Externally, the house should be built with brick. I mentioned before, that seconds would be best for facings; but I should not object to good stocks of an even colour. The dressings should be with white bricks: these may be placed in an endless variety of forms, without cutting, and would produce a good effect of light and shade. All the cornices should be white bricks. The corona might be of slate, or York paving-stone; in fact, a continuation of the roofs of the porch and balconies before described: but the slate or stone made use of must be throated, so that the water may drop off. The under side of the corona should be coloured, if it is slate, to resemble the white bricks; the top would not be of so much consequence: a great projection is the principal thing to be obtained to produce a good effect: the means of obtaining it are not always of consequence; therefore, slate or stone coronæ in thin slabs, and if not finely tooled, or any other material sufficiently durable, would produce broad masses of light and shade at a small expense, and equal in real pictorial effect to the richest and finest wrought cornice in expensive marble. Bricks, for the same reason, when properly managed, even without cutting, can be made ornamental; and they are our own material, and most durable; that is, the best bricks of the present day: then why should we reject them in ordinary buildings, or, rather, disguise them with cement, which in a very few years frequently cracks and peels off? Cement is excellent for using instead of mortar; but it does not adhere well to brickwork, unless it is the very



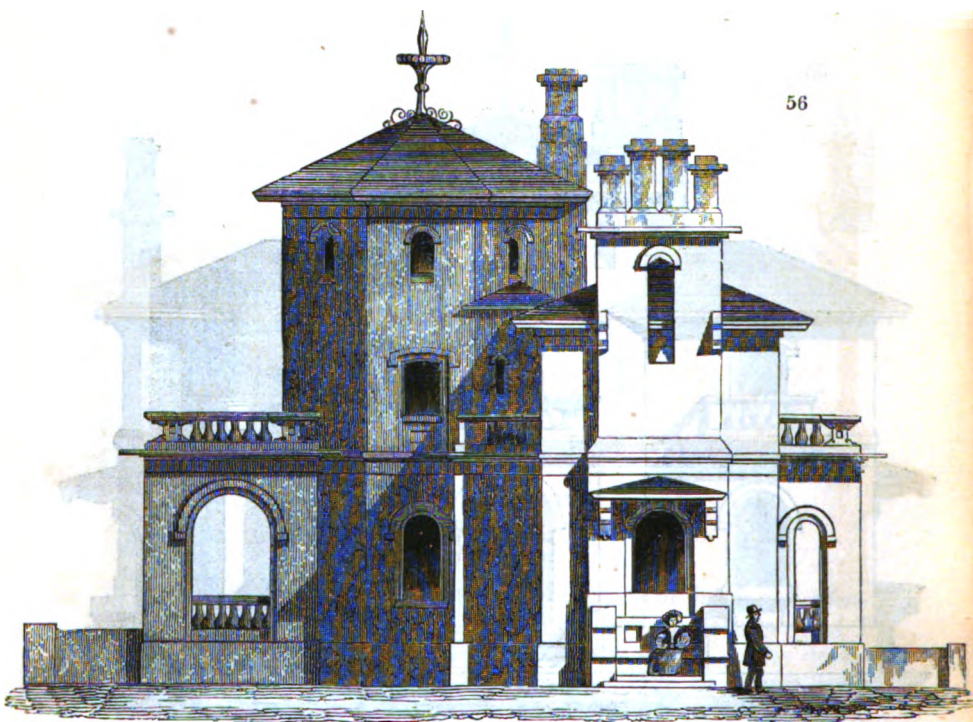
North-west Elevation.

best, and then it is almost as dear as stone; but for ornamental works nothing could be better: in some instances it is even better than stone. Wyatt's, for chimney moulds, balusters, vases, fountains, &c., and paving, has been found better than Yorkshire stone. Austin's cement is also capable of producing the same articles.

It will be unnecessary to make many observations on the elevations: I think they tell their own tale; and a close examination will clearly show the manner of the construction and effect.

Fig. 55. shows the north-west elevation, or the entrance front, with the porch, &c. The arched opening is in two half-brick rims; the outer arch projecting beyond the face of the wall three fourths of an inch. At the springing of the arches one or two bricks may be placed herring-bone-wise; and every ornament, at the springing of the arches, may be varied. It may be proper to remark, that the shrubbery is not shown in these elevations, as it would be according to the plan of the ground, the object being, here, to show the building divested of all ornamental planting.

In this and the other elevations, the balconies are erroneously

*South-west Elevation.*

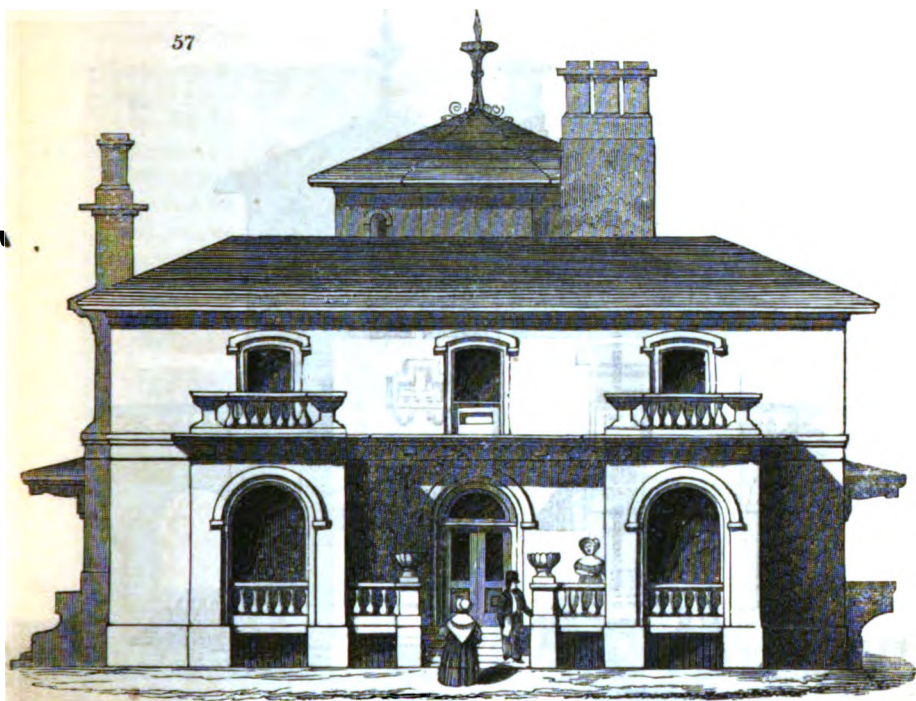
represented with stone balustrades ; but they should have light iron railing, as shown in *fig. 52.* p. 160.

Fig. 56. shows the south-west elevation. In this front is shown the chimney-stack from the kitchen, drawingroom, and bed-room ; also the window over the drawingroom fireplace, and a garden seat. This front is seen from the flower-garden.

Fig. 57. is the south-east elevation. In this front is shown the corona, continued through to form a covering to the landing : it is supported by cast-iron brackets. The entrance door has a plate of looking-glass in the place of a fan-light : this should be fixed at such an angle as to reflect the lawn and distant scenery, and to be seen when ascending the steps. This would always be an interesting object, as it would be confined within a frame, and thus form a living picture more perfect than when the eye is left to range from place to place.

Fig. 58. is the north-east front. In this front, over the study window, is a tablet, in which an appropriate inscription might be placed, or the founder's arms. This tablet is instead of a window, which would have been most inconvenient here, as may be seen by referring to the chamber plan, besides admitting too much

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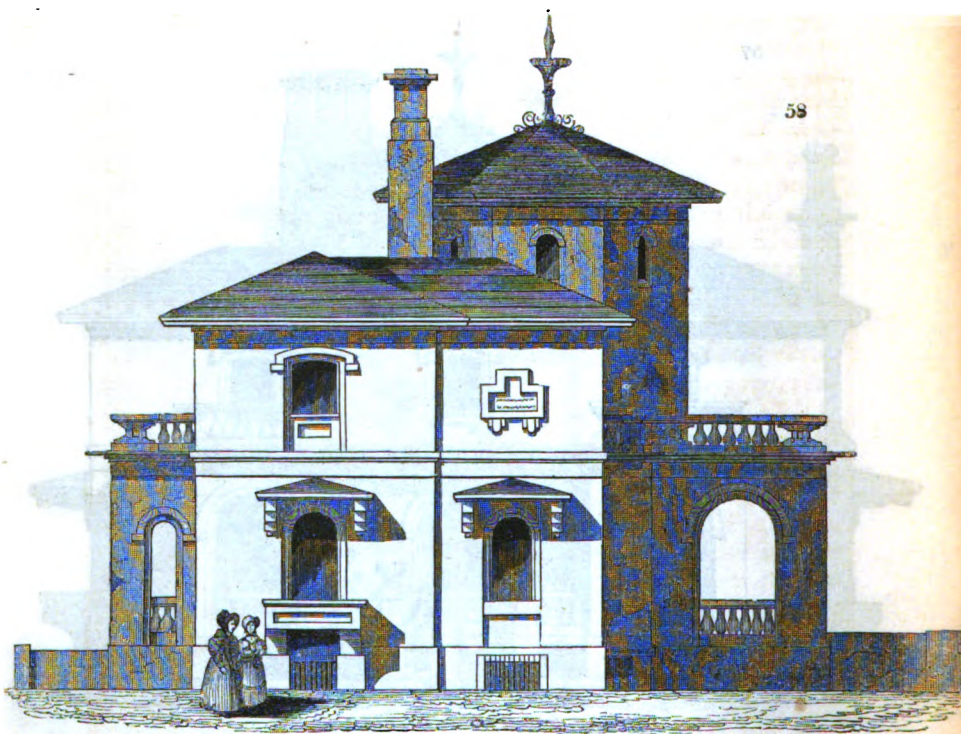


South-east Elevation.

light into the room. In this elevation I have omitted the chimney shafts at the other end, as they would not be seen, only at a great distance, and in a particular situation.

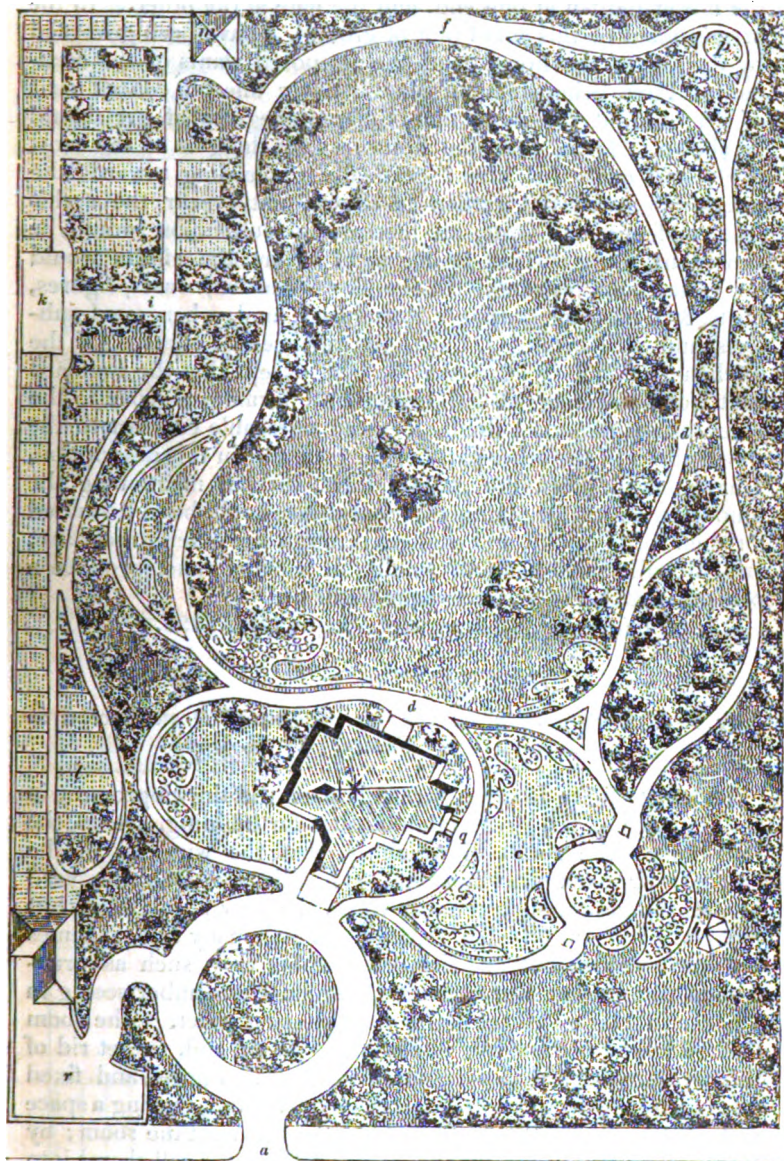
To make the building fire-proof, or, at least, nearly so, the divisions of rooms should be in brickwork, the stairs should be of stone, and the balusters and handrail iron: there would then be very little for fire to communicate with, as the principal conductors are generally found to be the hollow wooden partitions and the wooden stairs. Ceilings, if well plastered, are not likely to burn; and, as it is the nature of fire to ascend, it would not be a very easy task to make a floor burn: boxings to shutters, sashes, doors, and other wooden linings, are only to be feared; but, with careful building, and tolerably careful servants, no very serious accidents could occur. Houses, to be made perfectly fire-proof, would be attended with very considerable expense.

Fig. 59. shows a plan of the ground. In this plan, *a* is the entrance from the road; *b* is the lawn; *c*, the flower-garden and rosary; *d* and *f*, a walk all round the lawn, concealed in part by the shrubbery; *e*, a shaded walk, with grass paths leading to the other walks; *g* and *h*, garden seats of an architectural character; *i*, a grove of standard fruit trees, with here and there an evergreen,



North-east Elevation.

leading to the green-house (*k*); *l*, kitchen-garden; *m*, gardener's house; *n*, meadow; *o*, gate; *p*, flower-bed; *q*, garden seat under the drawingroom window; *r*, stable and yard. It will be observed, that the entrance from the road is placed near one side of the ground, in order to get more space in the situation, open to the best and most agreeable aspect. A carriage drive and road to the stables are here shown. It will be better, perhaps, to begin my brief description from the steps at *d*. This path is not made the same width all the way round the lawn, but it is varied, to produce that agreeable effect which a parallel winding path never does. Proceeding to the north of the house, we arrive at the garden seat *g*, which is opposite some ornamental flower-beds, raised a little above the path *d*. Passing round these beds we again enter the path *d*, at a more thickly planted spot, and gradually descend to *f*. This part is sunk gradually, so that it may not be seen from the house; and here is placed an architectural fence, which divides the lawn from the meadow. The lawn slopes from the house to this place in undulating lines, and the principal distant scenery is seen in this direction. We continue from *f*, gently ascending the path *d*, again to the house;



10 0 10 20 30 40 50 60 70 80 90 100 feet

M 4

but, before we leave this end of the ground, we will pass through the grass path leading to the shaded walk *c*: this walk leads to the flower-garden at one end, and the gate at the other. In the arrangement of this small plot of ground, I have been governed by the size of the house, and the supposed wants of the occupant. First, being small, it should never affect a concealment of art; but, at the same time, different degrees of art should be shown. Thus, near the house, every thing is of the most lively and cultivated kind: gradually proceeding towards the meadow, less dressed garden is shown, until, near the architectural fence and gate, an increase of cultivation would be consistent, and, without losing sight of art, the effects would be varied and pleasing. In the flower-garden, vases, figures, busts, &c., may be sparingly introduced; and, when good subjects, and well arranged, they have an excellent effect. Of the kitchen-garden very little need be said, except that the standard fruit trees, interspersed with evergreens, forming a grove to the green-house, would, I think, form an agreeable contrast to the waving lines of the other parts of the ground. In this description, I have merely given the general form, without mentioning the kind of trees, &c. for planting it; but these should be well studied for their form, colour, and changes through the different seasons; and, if judiciously planted, would, in a short time, produce a pleasure-ground of a picturesque nature.

25. Henrietta Street, Brunswick Square, Sept. 1835.

ART. IV. *A Suggestion for the Improvement of Drawingrooms in London Street Houses.* By W. S.

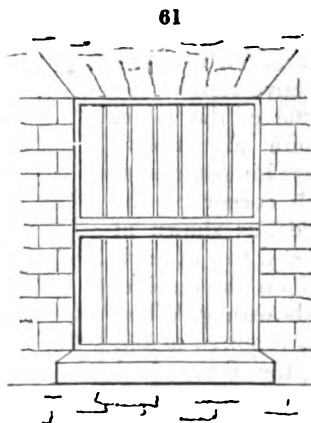
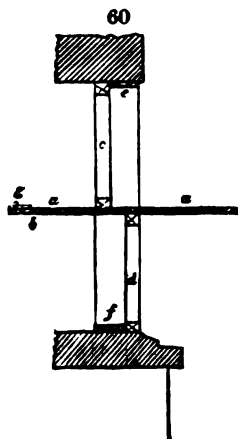
IN most of the London street houses the drawingrooms, in consequence of the great value of sites for building, are on the first floor: the result of which is, that the windows of the smaller, or back drawingroom, generally overlook the yard behind the house, and, in most cases, the view is anything but pleasant or beautiful. To remedy this evil, many little schemes are employed to shut out the disagreeable view, such as ornamental transparent blinds, &c. One plan I remember seeing in a house in Harley Street had a very pleasing effect. The room had two windows looking into a stable-yard; and, to get rid of this eyesore, each sash was glazed with ground glass, and fixed on even, or flush, with the outer edge of the wall, leaving a space sufficient to place a few pots of choice flowers next the room; by this means turning the two windows (if I may so call them) into small conservatories. This idea, enlarged upon, would have a very elegant appearance; for, instead of common windows, as usual, an alcove might be formed, glazed with ground and

coloured glaze, in which could be placed a good number of plants; so that, when viewed from the interior, the effect would be a great improvement on the dead walls, roofs, chimneys, yards, &c., belonging to other houses, which are generally to be seen from most back drawingrooms in London. If the rooms were fitted up in the Gothic style, the alcove would be a highly interesting feature of the room.

London, January, 1836.

ART. V. *Description of a Cast-iron Window, and Wooden Shutter, adapted to Warehouses.* By AUGUSTINE.

PERHAPS the accompanying sketches of a cast-iron window and shutter, which I lately saw in the elevation of some new warehouses, built for, I believe, the Aire and Calder Navigation Com-



pany, Call Lane, Leeds, may be useful to some of your readers, as the simplicity and security of the construction appear to me to be exceedingly worthy of imitation. The warehouses, I believe, were built under the directions of the engineer to the company.

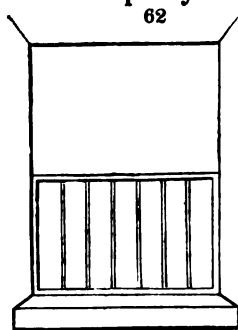


Fig. 60. is a section of the window, in which *a a* represent the shutter open; it being hung upon centres fixed to its two sides, and working in the outside frame. I was not sufficiently near to the building to be able to give correct details of the window; but the outside, or top, of the shutter, I imagine, is the longest, and, consequently, the heaviest, end; or the shutter may be

kept open by a bolt or wedge under it, as at *b*. The sashes (*c* and *d*) are so far apart as to leave room for the shutter at *e* and *f*, when it is closed; and at *g* there is a fastening to secure the bottom of the shutter.

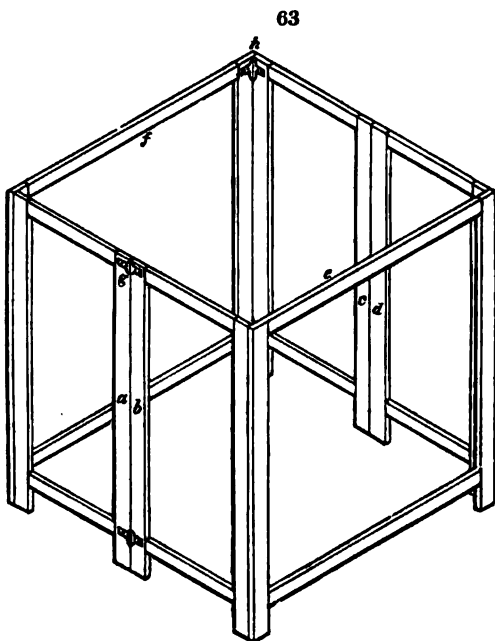
Fig. 61. is an elevation of the window with the shutter in the position in which it is shown in the section (*fig. 60.*); and *fig. 62.* is an elevation of the window when the shutter is closed; both of which are sufficiently explanatory to render description unnecessary.

It will be seen that, by this mode of constructing warehouse windows, there is, when the shutter is open, excellent ventilation and light, as well as perfect security.

December 11, 1835.

ART. VI. *Notice of a Folding Table brought from India.* By J. P.

Fig. 63. is a perspective view of the frame of the table. There are twelve brass hinges, one at each corner on the inside, as shown at *h*; and two at each end on the outside, as shown at *g*. When it is required to fold up the frame, *a b* and *c d* are drawn inwards, which will bring together *e* and *f*. The top of this table is in two pieces, having four narrow slips of wood nailed on the under side, so as to make it fit like a cover on the frame. The stuff is all $\frac{3}{4}$ -in. before worked; and the width of each piece in the frame is $2\frac{1}{8}$ in.



Old Bond Street, November 25. 1835.

REVIEWS.

ART. I. *An Historical Essay on Architecture.* By the late Thomas Hope. Illustrated from drawings made by him in Italy and Germany. Royal 8vo, 2d edition. London, 1835.

(Continued from p. 130.)

"If, however, so important a work of that age, as the pedestal of the Egyptian obeliak, placed by the Emperor Theodosius in the hippodrome at Constantinople, and representing that emperor assisting at the public games, surrounded by his sons and the whole court, is a wretched performance, we may well imagine what must have been the execution of other inferior works of art. Deformity seems so much to have been their universal characteristic, that when, somewhat later, St. Luke unaccountably acquired the reputation of having been a painter, and having taken frequent portraits of the Virgin, these latter seem only to have been regarded as more genuine productions of the Apostle, in proportion as they were more hideous.

"The wretchedness of these first images did not, however, prevent those, especially in relief (always more like reality), from taking on the fervid imaginations of the Greeks such a hold as to make their rulers, by degrees, apprehend a return to their ancient idolatries in a new shape. Thence, in 725, Emperor Leo the Isaurian, born and bred in a province whose ancient tenets were peculiarly given to images, began by waging against them a relentless war; and his son Constantine ended by obtaining, in a synod of all the Greek bishops, their utter and unqualified condemnation. From that period, all sculptured images, and with them all sculpture, disappeared from the Greek churches, and the art altogether died away.

"As, in Pagan Rome, the taste for beauty of form and outline declined, that for glare of colours and gilding increased. Rooms shone with the gaudiest painting, or the richest marbles; and of these latter, the natural hues were still varied and enlivened by art. This we learn from Vitruvius, and find exemplified in the baths of Titus, where the richest verde, and giallo, and rosso antico, deck the sides and floors of chambers. Pliny describes at length (l. xxxvi. cap. 25.) a species of mosaic for pavements, composed of interlayings of porphyry and serpentine (richer in colour, and less liable to wear out than softer marbles), which he calls *genus pavimenti Græcanici*. This sort of mosaic work, of what the Italians call *pietre dure*, cut in various mathematical figures, and inlaid in a bedding of softer white marble, whose snowy hue served to relieve their deep colours, seems to have become so extensive a manufacture, and to have been so much employed by the Greeks of Byzantium, as from thence to have obtained the distinctive name of *opus Græcum*; though, in later periods, and when artificers could not be obtained from Constantinople, it seems, in the monasteries of Italy, to have become the fashion to employ their own members to cut out and to form this laborious patchwork, which requires more patience than peculiar skill. Thence we not only find it in the churches of those cities peculiarly connected with the Eastern empire, — as at Ravenna, in Sant' Apollinare, and in San Vitale (though, in the latter, covered over by a later and higher floor); at Venice, in St. Mark, in the dome of Torcello; and in Santa Maria, and Donato, in the island of Murano, inscribed with the date of its completion, viz. the 11th of September, 1140; — but at Milan, in Sant' Ambrogio; at Florence, in San Miniato; at Monte Cassino, in its Benedictine Abbey; as well as at Rome, in San Lorenzo, Santa Agnese Fuori delle Mura, Santa Maria Maggiore, Santa Maria in Cosmedin, and Santa Maria in Araceli, San Clemente, San Giacomo and Paolo, and many others; — and it must be confessed that, for pavements of buildings, exposed to great wear and tear, it is

difficult to conceive any thing of which the expense is better repaid, both by its elegance and its durability.

"A species of inlaying, still more splendid than that for floors intended to be trodden under foot, was devised for walls, destined to less hard usage. It consisted of large compartments of serpentine and porphyry, surrounded and separated by borders composed of small pieces of the same materials, intermixed with others whose gilt surface was both shown and secured by a coat of glass, inlaid in panels of white marble, which, around these borders of glittering colours, frequently displayed others as richly sculptured, in beads, in foliage, and in scroll-work. The altar, the bishop's throne, the ambones, and the screen and balustrades of the sanctuary, generally glittered with this magnificent coating; for in these members which, like the slender shafts of pillars, and the small fasciæ of friezes and cornices, left not room for the larger compartments of solid porphyry and serpentine, the narrower ribands of purple and gold were still inserted.

"Of this species of embellishment, manufactured at Constantinople until the extirpation of the Greek empire, and thence diffused over all the countries within easy reach of Greek artists, we find, at Rome, magnificent examples, in works of very distant ages; from those where the round arch still was alone adopted, to those which had embraced every variety of the pointed, the broken, and the scalloped. We find it at San Lorenzo: outside in the entablature and panels of the portico; as well as inside, in the throne ambo, and screen round the sanctuary. We find it in the fairy cloisters of San Giovanni Laterano, and San Paolo Fuori delle Mura, whose twin pillars, twisted into every variety of shape, small round-headed arches, and entablatures, glitter in the sun like the back of the diamond beetle: in the pointed ciboria, after the German fashion, added in the fourteenth century to the altars of old St. Peter's, San Paolo, San Giovanni Laterano, Santa Maria in Cosmedin, and Santa Maria in Araceli. We find it in the screen and reliquary of San Clemente; in the receptacle for the host at Santa Sabina; in the ambones and altars of San Nereo and Achilleo; in the altar and bishop's throne in San Cesareo; and in the ambones of Santa Maria in Cosmedin, and Santa Maria in Araceli; in the ancient bishop's thrones of San Giovanni Laterano and St. Peter's, now put by as antique lumber; and in other places too numerous to mention.

Chap. xvi. *Symbols used by the early Christians, and introduced into their Constructions.* The cross was every thing among the first Christians. It was made "the chief emblem of their faith, the chief mark of their community, their standard, and their watchword. Its name was constantly on their lips, its image on their bosom; they continually uttered its appellation and made its sign. To its sacred form were attributed peculiar intrinsic powers to protect from evil those by whom it was worn, or was merely traced in air; and it was thence carefully imprinted alike on the habitations of the living and the receptacles of the dead." (p. 178.)

While Christianity was struggling with Polytheism, the Christians, in order not to offend too violently the prejudices of the Pagans, converted the symbols of the latter religion into the emblems of the former one; so that the Christians appeared Gentiles to the Gentile, and were yet known as Christians by the Christian. Thus the emblems of heathen deities were rendered allusive to the parables of Christ; the vine, the genii sporting

among its tendrils, and all the rites of Bacchus, were by the first Christians made symbolical of the vineyard of faith, and were, in consequence, introduced on the edifices and tombs of Christians, as may still be seen on many remains of antiquity at Rome. The ear of corn, employed in the rites of Ceres, became significant of the sacramental bread; and the palm branch, which, among heathens, signified triumph over armies, was by the Christians made to signify the triumph of the cross. "Venus' dove became the Holy Ghost; Diana's stag, the Christian soul thirsting for the living waters; Juno's peacock, under the name of the phoenix, that soul after the resurrection. One evangelist was gifted with Jupiter's eagle; another with Cybele's lion; and winged genii and Cupids became angels and cherubs."

(To be continued.)

ART. II. *Moller's Memorials of German-Gothic Architecture; with additional Notes and Illustrations from Stieglitz, &c.*: by W. H. Leeds, Author of several literary Works on Architecture. To which are added *Tables of Continental Lineal Measures*: by W. S. B. Woolhouse. 8vo, pp. 176. London, 1836.

IN speaking of a volume, the titlepage of which bears the name of a valuable contributor to the *Architectural Magazine* we must encounter the suspicion of our opinion being influenced by that circumstance; yet, on the other hand, as Mr. Leeds is known to be a contributor to our journal, we are to the full as likely to be more reserved in our praise than we else might be, lest our judgment should appear warped by personal partiality. On the present occasion, however, the difficulty is materially lessened by his appearing chiefly in the character of translator; and, as he himself remarks, the work is of that kind which imposes on its translator no more than verbal fidelity. Had he, therefore, limited himself to the original, we could only say that he appears to have done it justice: nor is it any fault of his, if some of the descriptions are more concise than could be wished. But he has performed his task in a more *con amore* spirit, enriching the volume with much interesting matter derived from various German writers, and also by several notes of his own. Hence, although primarily intended merely to supply the purchasers of Moller's work with the assistance of an English version of the text, or to accommodate those who would be satisfied with possessing the dissertation on German Gothic architecture, the present translation may be considered as, in some respects, a new, certainly a very improved, work.

Among the additions, some of which are incorporated with

the text, but placed between brackets, others thrown into the form of notes, the account of Ulm Cathedral, from Von der Hagen, deserves particular mention, as being an exceedingly full and perspicuous description of the whole edifice; whereas, what is said of that minster in Moller's own letterpress is limited to a few brief remarks, and those chiefly relative to the tower alone: so that, were it not for the information here collected by the diligence of his English translator, we should obtain but a very imperfect knowledge of that fine, and, in many respects, singular edifice. In making this remark, we do not intend to cast any reflection upon Moller; for, unless in those instances where he has given a series of plates illustrative of the same building, as is the case with the four churches forming the second volume of his work, he seldom says more than what immediately relates to the subject of the respective engravings. Besides, it should be borne in mind, that German readers could very well dispense with much information that must prove as acceptable as it is new to English ones; since the former would be able to refer to various other works, for those particulars which it did not accord with Moller's plan to lay before them.

The length of Von der Hagen's description (six pages in small type) would prevent our giving more than an extract from it, even did we consider it allowable to transfer the whole of it to our pages.

"This edifice is one of the most perfect examples of German architecture during the middle ages, and worthy to be classed with the cathedrals of Cologne, Strasburg, Vienna, Regensburg, and Freiburg. Its nave is the loftiest of any, being 141 ft. high (144 ft. English), and, with its four side aisles, the widest also, having a breadth of 166 ft.; besides which, its tower would, if completed, have surpassed all others in loftiness. Like the Minster at Freiburg (see the plates of that building in the second volume of Moller), it has only one tower in front, the upper and most beautiful half of which is wanting, as the present structure has not been carried up much higher than the large middle story, where the octagon begins to rise from the square below. The under part, however, is more finished and richer than that of the tower at Freiburg, and very much in the style of the upper part of that at Strasburg (which is of the same date), in its lofty uninterrupted shafts, and its light open work; especially that of the two winding staircases, carried up externally between the pillars and open arches. The foundation of the choir was laid in the year 1377, upon piles of elm wood; and within 111 years afterwards, the church was completed, and the tower carried up as high as it is at present, namely 237 ft.: the whole expense of which was defrayed by the town burghers." (p. 79.)

"Like as has been remarked of that at Strasburg, the tower at Ulm impresses the beholder with the idea of its being a gigantic production of metal work; and the more so on account of the fine brown tint of the stone, and the intricacy of the workmanship, which causes it to appear as if cast in a mould: in fact, many smaller works, in a similar style of design, were actually so executed; Peter Vischer's monument, for instance; and at the present day cast iron has been very successfully employed for similar purposes, as may be seen by Schinkel's monument for the Queen of Prussia. The upper part of the tower does not form that sudden and strong offset from the lower one

which is observable in those at Freiburg and Strasburg, but is united with it more closely by means of the arches and pinnacles that spring from the parapet itself. The portion which remains unexecuted bears, with its four open spiral staircases, a strong resemblance to that at Strasburg: yet here the staircases terminate in turrets; and, instead of the spire itself being a continuation of them, in a series of step-like divisions, it rises upwards insulated from the rest, as in the minster at Freiburg, but forms a still more singular display of tracery, which twines itself upwards as if it were composed of plants, to the crest of foliage on its summit, where the Holy Virgin, with the Child in her arms, appears to have just descended, and taken her station. It is hardly necessary to observe, that the whole design is peculiarly rich; most luxuriant in its ornaments and sculpture, as were, indeed, most of the productions of the same period, after Charles IV.: and this at Ulm was the last and most considerable work in Germany." (p. 81.)

While the above specimen will serve to show what Mr. Leeds has engrafted upon Moller, it suits our purpose better than anything we could select from "explanations" of the latter, which, being written to accompany the engravings, do not contain much that would either be interesting apart from them, or so well bear to be detached from the remainder.

Besides the literary "illustrations" from German writers, Mr. Leeds has inserted a few notes and remarks of his own; and in one of such notes he says he had it in contemplation to draw up an enlarged nomenclature of architecture, incorporating in it many terms formed for the purpose of clearly defining and expressing with brevity various particulars, which, for want of such a vocabulary, it is now impossible to note without being exceedingly prolix. The task would be one of some difficulty: still the experiment would be well worth making; and we know no man more likely to bring it to a successful conclusion than Mr. Leeds. In this opinion, we are sure, all the readers of his articles in this Magazine cannot fail to agree.

One improvement upon the original (a feature that, we think, ought to be adopted in all similar architectural works) is, the table of its principal dimensions attached to the account of each of the four churches forming Moller's second volume; for, although the dimensions may be taken from the plates themselves, it is far more convenient to have them ready set down for immediate reference: besides which, the dimensions of all the buildings may thus be compared together with the greatest facility.

Before concluding, we must not omit to observe that Mr. Woolhouse's tables of Continental measures, given as an appendix, are so exceedingly useful, that many will, no doubt, be glad to possess the work, if merely for the sake of them alone. It further recommends itself by a very attractive prefix; namely, an exceedingly well executed frontispiece, showing the noble church of St. Elizabeth at Marburg.

A.

ART. III. *L'Architettura Antica descritta e dimostrata coi Monumenti*. Dall'Architetto Cav. Luigi Canina. (*Ancient Architecture described and demonstrated from existing Monuments*. By the Chevalier Luigi Canina.) Imperial folio, in Parts. Parts I. to XII. Rome, 1832 to 1834.

WE have been favoured with the loan of a copy of this magnificent work, which is now publishing in parts, the first of which appeared in 1832, and the 13th in 1834. The price varies from 15s. to 30s. a part. Each part contains several sheets of letterpress, and several plates. The plates are very numerous, and some of them are of subjects which we have not observed in previous works of the kind.

The work is divided into sections. Sect. I. contains an account of the method of constructing buildings adopted by the Egyptians, and by those ancient nations who, in their style of building, approached nearest to Egyptian architecture. The first part of this section contains a description of the buildings erected during the earliest period of Egyptian history; and the conclusion contains an account of those erected in the time of the last Ptolemies.

The second section treats of the architecture of the Greeks; and it begins, like the preceding one, with the first known period of Grecian history: then follow observations on the style of architecture among the Greeks till they became subject to the Roman power.

The third section contains an account of the methods of constructing buildings employed by the Romans; and also of all those buildings constructed in Rome, and in those countries which successively fell under the Roman power; comprised in the period between the foundation of Rome, and the removal of the imperial power from that city under Constantine. The account of the history of the art of this period is principally compiled from D'Agincourt's works.

All the sections are subdivided into three parts. The first part contains an account of the monuments, and treats of every thing relative to the history of the art; the second treats of the theory in the different kinds of buildings; and the third treats of all those things which relate to monuments in particular, which cannot be so well understood without the two accompanying and preceding parts.

All these sections are arranged in such a manner as to give a distinct idea of the methods of building adopted by different nations; and they present a detailed history and description of ancient architecture as it respects the theory of the art: it may also be said to be a work truly original of its kind; and useful not only to architects, but to all those who may wish to have a

knowledge of the true principles of the art, and of the different methods of practising it adopted by the ancients.

Beyond this very summary outline of its form and leading contents, we cannot pretend to speak ; for it would be not a little rash, in any one, to deliver an opinion on the literary execution of a work of such magnitude, without deliberately studying the text, during which, if the estimate founded upon first impressions should happen to have been too favourable, one has time to correct it. We, on the contrary, having been limited to a general inspection of the portion published, can only affirm it to be the most comprehensive performance on the subject of ancient architecture yet undertaken, it being, in fact, a systematic collection and arrangement of what has hitherto been separately treated of. Yet, although it is infinitely more complete than any other general history of ancient architecture, the individual buildings are not exhibited so much in detail, as in works more special in their object. Those, therefore, who already possess the chief publications which treat of this branch of the study of antiquity, and which have contributed the materials of the present one, will meet with many repetitions, and omissions likewise ; at the same time, besides having the whole concentrated within a convenient compass, they will meet with some subjects either previously unedited, or of exceedingly rare occurrence : among these may be classed the theatre of Pompey, that of Herculaneum, the double temple of Venus and Rome, Trajan's Forum, &c.

With the exception of some small shadowed etchings, intended to show the perspective effect of the more remarkable buildings, but which are by no means to be commended either for drawing or execution, the engravings are in outline ; and, though they certainly fall short of, may be allowed to approach, the best specimens of that mode which France and Germany have given us.

Luigi Canina enjoys the reputation of being one of the very first among the living architects of Italy ; and this work will certainly extend his celebrity ; and it is likely to be of distinguished service to his own countrymen, who have hitherto been too exclusively attached to the *cinque cento* system, and have hardly, as yet, begun to catch any of the true spirit of the antique in their own practice.

We had nearly forgotten to mention that there is another edition, the text of which is in octavo, separate from the plates ; and, although not recommended by uniformity, it must be preferable on the score of convenience.

On a future occasion, we intend to examine the historical part of this work more in detail, with a view to select from it anything that can be added to the information given in our extracts from the interesting work of Mr. Hope.

ART. IV. *Designs for the proposed New Houses of Parliament, consisting of Four Plans, Four geometrical Elevations, One longitudinal, and Two transverse Sections, with Two perspective Views; reduced to Half the Size of the Originals, submitted to the Committee of Taste, December 1. 1835. Designed and drawn on Stone by Peter Thompson, Carpenter and Builder. 4to. London, 1836. 16s.*

WE commend Mr. Thompson for his spirit in publishing his design; and we only wish that all the architects who, like him, gave in unsuccessful designs, would either follow his example, and publish them in separate volumes; or, what would be far more economical for them, and far more convenient for the public, that they would join together and adopt the liberal proposition of Mr. Weale. (See p. 97.) Though we are glad to see the courage, energy, and independent spirit evinced by Mr. Thompson in his appeal to the public, and are also pleased to find "a carpenter and builder" aspiring to a high degree of knowledge of design and drawing, yet we cannot compliment him on his design. This confession on our part, we shall probably be told by some architects, affords a proof of the absurdity of our encouraging working builders to acquire the knowledge which belongs to architects; and confirms the old adage, that a little knowledge is a dangerous thing, &c. To objections of this kind we have one general reply: let knowledge be free; and let all who have acquired skill and knowledge enough to practise professions, be free to exercise them, whether they have acquired their knowledge in the regular manner or not. The only exception to this rule is, where human life is concerned. In architecture, let those who value economy more than taste or authority employ a carpenter or a bricklayer, who attempts, in conjunction with his own trade, to exercise the profession of an architect; and let those who value taste and correctness more than economy employ architects of first-rate reputation. The question is, not which of the two modes, supposing either to be exclusively practised, would lead soonest to the general improvement of the architecture of the country; but whether the prohibition of the inferior mode would not have the effect of retarding, instead of advancing, the superior one. In our opinion, decidedly, the encouragement of carpenters, bricklayers, and every person connected with building, to study architecture as a science, so as to be able, when required, to give a design as well as to execute one, would facilitate the progress of improvement much more than any exclusive system. Did carpenters and builders study architecture as an art of design, attempts at the improvement of common dwellings would be made every where; and, though many of these would, at first, be incorrect, or in

bad taste (for the road to truth is generally through the paths of error), these very faults would lead to attempts to do better: and, in the path of improvement, any thing is better than standing still. The public, in this reading and thinking age, would soon acquire both a knowledge of, and a taste for, architecture; and, till this is the case, there can be no security for general improvement. In all ages, those who have been able to employ first-rate architects have been able to erect what, in their day at least, were considered first-rate buildings; and this is still, and ever will be, the case, however general a high degree of architectural knowledge may become: but our object is to improve the buildings and the architectural taste of the great mass of society. Many architects, we know, consider these views as inimical to their interest, and look with any thing but a favourable eye on our *Encyclopædia of Cottage Architecture*, and on this Magazine: but this is to take an extremely limited view of the subject, and one which in no other profession would hold good. Have physicians been less employed in consequence of the increased intelligence of apothecaries; or lawyers injured by the publication of books on law; or gardeners by those on gardening; or teachers by the great increase which has lately taken place in school books? On the contrary, was there ever a time when, in England, there were so many physicians, lawyers, gardeners, or teachers, as there are at present?

But to recur to the work before us: the first impression which the elevation made on us was, that it exhibited a general confusion in the parts; and, on reflection, we found that this impression arose from the want of a sufficiently striking leading feature. The details of the plan we did not enter into; but we sent the book to an architect, much more competent to judge of its merits in respect to detail than ourselves; and we place the remarks which we received from him in reply before our readers. Mr. Thompson will, no doubt, think these remarks severe; but we feel confident that we are rendering him a much greater service by publishing them, than we should have done, if we had loaded him with indiscriminate and undeserved praise, or passed over his work in silence, or with a slight commonplace notice.

"I have just looked over Mr. Thompson's design for the New Houses of Parliament; but to give my opinion fully on its merits and defects would take considerably more time than I can now spare; I will, therefore, only point out such parts as most particularly struck me. In the ground plan, there is a passage about 340 ft. long, with only one window at each end; and the rooms Nos. 17, 18, 19, and 20. appear to be lighted only from this passage, except what borrowed light they may obtain from the front rooms. This is one defect which immediately struck me. In the plan, generally, there are some beauties:

for instance, all the principal entrances would, I think, have a good effect, if the architecture were correct. The king's entrance, as continued on the principal floor, is very well arranged; and the passages, &c., on this floor seem to be conveniently placed; but, although I am one of the ninety-three rejected competitors, and, of course, ought to be well acquainted with the subject, it would take too much of my time to examine the ground plan minutely; so I shall at once proceed to the elevations. In these the author (I cannot call him architect) has shown his total ignorance of architectural composition, with respect to grouping as well as detail: in fact, it is extremely difficult to give an opinion on such a design, as it is totally at variance with every principle of architectural composition. In the first place, we have windows of every dimension and form, without the usual decorations of the cusp; pinnacles of gigantic dimensions; abrupt arches; square-headed windows, in juxtaposition with arches, thereby destroying all unity; and oriel windows, with openings 10 ft. wide, uninterrupted by mullions, as is shown at the north end of the west elevation, and the peers' portico.

"I very much doubt of even the possibility of carrying the design into execution, unless constructed in wood. Generally speaking, the whole composition of the elevations is in what is vulgarly called 'Carpenter's Gothic.' I need say very little of the sections, as they are upon a par with the elevations: some of the ceilings, perhaps, might, if corrected, be novel, and, in some instances, have a good effect; but I fear the pendants in the House of Commons would look very heavy, coming, as they do, abruptly from the centre of the ceiling. I will now pass to the perspective views. Here the whole composition has a better effect, in consequence of the artist knowing more of Gothic architecture than Mr. Thompson; for it is evident these views were not drawn by the same person as the elevations; but, still, the same defects are glaring: the mixture of windows with mullions, and others, of the same size, without mullions; and the deficiency in grouping, though the artist has managed to give the whole a more united appearance by his beautiful mode of distributing the light and shade. But, divested of its artificial effects, what is the design? A mass of unconnected building, which the eye wanders over with dissatisfaction, vainly seeking a leading feature, of sufficient magnitude, on which to fasten its greatest scrutiny; or subordinate parts, for its repose. I have, perhaps, been rather severe in my remarks, but Mr. Thompson must expect severity; for, if he had ever taken the trouble to examine Westminster Abbey for one day, he would not have fallen into the absurdities he has allowed to go before the public. With such buildings as the ancient Gothic abbeys,

castles, and domestic residences, which are to be met with in so many parts of England, before his eyes, it is really astonishing how a man pretending to architecture could commit such faults."— *B.*

ART. V. *Original Designs for Furniture, Candelabra, Architectural Decorations, &c.* By S. C. Brees, Architect. London, 1836.

THIS work cannot be better made known to our readers, than by the following extract from the author's address: — "In presenting these designs to the public, the author begs to remark that his object, throughout, has been to furnish new ideas for the artist and manufacturer, to improve upon rather than perfect studies, always endeavouring to preserve a consistency with the peculiar style of each design. In the choice of his subjects, he has collected as great a variety of articles of taste and general utility as was practicable in six sheets; and, should the work meet a favourable reception, he proposes to continue a selection adapted to every branch of ornamental manufacture, and architectural decoration, as ceilings, shop-fittings, fronts, &c. He also respectfully submits that the several designs are not only applicable to particular branches of manufacture, but are, in part, to all: for instance, an idea for the pillar of a lamp is as well obtained from a fire-screen, bed-post, or any other article of suitable effect, as from a design expressly made for it; so that the composition of the various parts of an ornament will be found equally useful with its application of a whole." No. I. contains six neatly engraved lithographic plates of subjects in the Grecian and Gothic styles, and in the taste of Louis XIV.

ART. VI. *Literary Notices.*

*SPECIMENS of English, Flemish, enriched Ornaments, and Architectural, and other Decorations, by eminent German, Flemish, and English Masters, during the Periods of Henry VIII., Elizabeth, and James I., and the Middle Ages, collected on the Continent and in England, are about to be published in ten parts, each to contain ten elaborate plates. The plates of each part, being large, will comprise several subjects. The subjects will be classed as follows:—*Class A. Specimens of the English architecture of the Tudor and Stuart periods. Class B. Ornaments, furniture, &c., of the same ages. Class C. Flemish and German specimens of the same ages. Class D. Ornaments, furniture, plate, &c., of the same times. Class E. Early timber houses

of Germany. Class F. Enriched capital letters from 1540 to 1628.

A practical Treatise on the Construction of Oblique Arches, commonly called skew arches, as applicable to railways, canals, &c. By George W. Buck, C.E., Corresponding Member of the Institution of Civil Engineers, Assistant Engineer on the London and Birmingham Railway. In 8vo, with plates.

The Transactions of the Institution of Civil Engineers. In 4to, 350 pages of letterpress, twenty very neatly engraved plates, and a fine portrait of the late Thomas Telford, Esq., engraved by Edwards, from a picture in the possession of the Institution. 24s.

Treatise upon the Political Economy of Railroads, in which the new mode of locomotion is considered, in its influence upon the affairs of nations. By Henry Fairbairn.

Mr. Britton's *Cashiobury* is in a state of great forwardness, and very speedily will appear. Only 150 copies will be printed.

MISCELLANEOUS INTELLIGENCE.

ART. I. General Notices.

THE Egg and the Anchor, or Arrow-Head, so general in architectural ornaments are supposed to be emblems of fertility and reproduction. The arrow-head is supposed to represent the leaf of the *Sagittaria sagittifolia*, a plant which grows in water throughout Europe, and also in China and India; and the egg, the emblem of fertility, to be an imitation of the cyamus, or sacred bean, whose history is given in *Exot. Bot.*, v. 1. 59. (Smith's *English Botany*, vol. iv. p. 145.) The cyamus of Theophrastus, of Salisbury, and of Smith, is the *Nelumbium speciosum* (fig. 64.) of some botanists of this day. It inhabits slow streams and muddy and stagnant waters in the hotter parts of Asia: the semblance of it is frequently met with upon Egyptian monuments and coins. Kircher has stated, that, in the representation, in Chinese pictures, of Amydas or Fumbo sitting upon a throne: the throne is designed from the flower of this plant. The part of the plant which bears the nuts (fig. 64.) is of the figure of an inverted cone that is broader than high, and has a number of cells, each with one end open, situate in its upper part, the base of the cone: this resembles an instrument in use in a game called by the French, from a very early date, "lotos;" a word which is one of the ancient names of this



plant. Each cell includes one nut, of about the size of a hazel nut, whose kernel is reputed to be the Egyptian bean which Pythagoras forbade his followers to eat. The plant now common in India and South China has been long deemed there one of the sacred plants. (Translated from De Candolle's *Règne Végét. Syst. Nat.*, ii. 45, 46.) — J. D.

A new flat Tile for covering Roofs. — A patent has been lately obtained by Mr. Richard Sheppard of Newport Pagnel, for an improved tile, which seems to combine security with durability and economy. The tiles are perfectly flat, and the edges are formed to fit into each other by a sunk or grooved joint; each course lapping over the other, 3 in., and forming a continued horizontal line or shadow, every 12 in., round the whole of the roof. The hips, ridges, and valleys, are formed with the same material. The cost is stated to be about 12s. per square. — J. R. Chadwell Street, Myddelton Square, March 5. 1836.

ART. II. Domestic Notices.

ENGLAND.

INSTITUTE of British Architects. — February 29. H. E. Kendall, Esq., Fellow, in the chair. The minutes of the last Meeting were read. The balance in the treasurer's hands appeared to be 220*l.* 16*s.* 2*d.* The following gentlemen were balloted for and declared to be duly elected : — *As Fellows* : John Bull Gardiner, Architect, Bank Chambers, Lothbury; William Hurst, Architect, Doncaster. *As Associate* : Frederick Thatcher, 19. Prince's Street, Stamford Street.

The secretary announced that the following donations had been received since the last Meeting : — H. Sass, Esq., copy of his work, entitled *Journey to Rome and Naples*, 8vo; Joseph Hume, Esq., M.P., print of Captain Brown's suspension bridge across the Tweed; Mr. Dipple, mason, Richmond, specimens of marbles; Sonnini's *Travels in Upper Egypt*; Morris's *Rural Architecture*, 4to; Godwin's *Roman Antiquities*; *History of Painting and Sculpture* : Mr. Caveler, two proofs of his print of the screen of St. Stephen's Chapel; Mr. Weale, bookseller, Moller's *Memorials of German Gothic Architecture*; M. Bertini, copies of plan for the completion of the Louvre and Tuilleries, at Paris; M. Guenepin, Hon. and Corresp. Member, *Philibert de Lorme*, fol.; Henry Rhodes, Fellow, portrait of the late James Wyatt, architect, and specimens of stone; S. Angell, Fellow, copy of his work on the *Metopes of the Selinuntine Temples*. Resolved, that the cordial thanks of the Institute are due to the several contributors above named, for their valuable additions to the library and collection.

The secretary then read a paper by Nathan Garrick, Esq., being a translation of part of a German work on the Polychromy of Ancient Architecture and Sculpture, presented to the Institute by M. Châteauneuf, Hon. Member. Resolved, that the best thanks of the Meeting are due to Nathan Garrick, Esq., for his kindness in undertaking the said translation for the Institute; and the members hope that he will be pleased to complete a subject so deeply interesting, and so ably begun.

Mr. Donaldson explained Mr. Martin's plan for improving the Sewage of the Metropolis; and Mr. Martin being present, and having given additional information on the subject, — Resolved, that the best acknowledgements of the Institute be presented to John Martin, Esq., for the communications just made.

March 14. P. F. Robinson, V.P., in the chair. The minutes of the last Meeting were read. Mr. Gardiner, Fellow, and Mr. Thatcher, Associate,

having attended for the first time since their election, were severally admitted as members, according to the regulations of the Institute. The balance in the treasurer's hands appeared to be 267*l.* 5*s.* 9*d.* The following nominations and recommendations were read:— *As Fellow*: John Shaw, Architect, of Christ's Hospital. *As Associate*: Hervey Eginton, Architect, Worcester. Letters from M.M. Suys of Brussels and Huyot of Paris, in answer to their being elected as Hon. and Correspond. Members, were also read.

The secretary announced that the following donations had been received since the last ordinary Meeting:— John Bull Gardiner, Fellow, 10*l.* 10*s.* for general purposes; George Morant, Esq., two drawings, framed and glazed, being views of St. Paul's Cathedral by Malton; W. Wallen, Esq., *History of the round Church at Little Maplestead, Essex*, 8vo, plates: Mr. Weale, Chev. de Pambour *On Locomotive Engines and Railways*, 8vo; *Tables of Continental and English Lineal and Square Measures*, 8vo; Edward Edwards, Esq., a letter to B. Hawes, Esq., M.P., upon the evidence taken before the Select Committee on the British Museum, by the donor; H. E. Goodridge, Fellow, of Bath, four prints of edifices designed and erected by him; Robert Wallace, Fellow, five or six dozen casts, being specimens of Gothic ornaments taken from Winchester Cathedral. Resolved, that the cordial thanks of the Institute be presented to the several gentlemen above named, for their valuable contributions to the funds, library, and collection.

The secretary then read a paper explanatory of M. Brunel's mode of constructing brick arches without centring; and also explained various experiments of that gentleman, with regard to the insertion of iron hoops in constructions of brickwork in cement. Resolved, that the best acknowledgements of the members are due to M. Brunel, for the communication just read, connected as it is with a new and very valuable principle in construction; and to Mr. Donaldson for the pains which he has taken in making himself master of the subject, and for his able explanation of the same to the Meeting.

Mr. Godwin, Associate, read a paper upon the Freemasons, as connected with architecture. Resolved, that the best thanks of the members be presented to Mr. Godwin, for the interesting paper just read. [Mr. Godwin has kindly contributed this paper to this Magazine, and it will appear in our next Number.]

M. Brunel's Mode of constructing Arches without Centring. The principle, which was originally adopted, and its efficiency ascertained, in the formation of the shaft of the Thames Tunnel, is founded upon the cohesive power of Roman cement, coupled with a system of ties, the most eligible substance for which, from a series of experiments performed by M. Brunel, appeared to be hoop iron. The piers having been constructed in the usual manner, it is proposed to pin or secure to them a mould for the purpose of determining the contour of the arch. A narrow rib may now be carried over, and keyed, using cement (with the occasional insertion of ties), which, by its adhesion to the brick being greater than the cohesion, enables the arch to be carried to any extent within the limits of the strength of the material. The several arches being in succession, once keyed, they will be in a state to receive the whole of the materials necessary to the completion of the bridge.

The bridge of the Santissima Trinità at Florence was particularly adverted to, as affording a magnificent example of rubble construction, and the durability of the material. The arches are composed of a mass of irregular stones embedded in mortar, having the consistence of a single stone, or of two stones abutting against each other at the crown.

In Mr. Godwin's able Paper on Freemasonry, he traced the history of the Freemasons from the earliest period of their formation into a body; marked their connexion with the most important edifices of the middle ages and the Gothic times; and instanced the various immunities which they enjoyed, and the bond of union which connected them together. The author followed them through their different historical epochs, much in the same manner as

Dallaway has already done in some parts of his *Series of Discourses on Architecture* [reviewed in this Magazine, Vol. I. p. 202.], filling in the outline which that author had faintly traced.

The Council has recommended the two following as the subjects for Premiums during the present year :—

“On the effect which should result to architecture, in regard to arrangement and design, from the general introduction of iron in the construction of buildings.

“On the practical application of the theory of sound in the construction of edifices, by which the rules may be ascertained for building theatres, churches, halls, and other places for public meetings, in the manner most favourable for the transmission of sound.” — *J. W.*

The New Houses of Parliament.—The report of the Committee on Mr. Barry's plan was brought up, March 15., in order to prepare the way for getting an estimate formed of the expense of carrying it into execution. The highest compliments were paid to the plan by Mr. Hall and Sir Robert Peel; and it was observed by the chancellor of the exchequer, that on a former occasion a question had been put to him, which implied that there had been some previous communication of Mr. Barry's plan to the commissioners; but he, the chancellor of the exchequer, was now able, in the most distinct and precise manner, to assert, that, up to the moment when the seals were broken, not one of the commissioners was aware which was Mr. Barry's plan. (*Morn. Chron.*, March 16. 1836.)

Whether Mr. Barry's plan was seen by any one of the commissioners or not, we believe that there is only one opinion, among architects and members of parliament, who have seen it, as to its transcendent merits; and, if the houses are to be rebuilt on the old site, we hope the government will not think of injuring the plan on account of two or three hundred thousand pounds more or less of expense. After fooling away above a million on that disgrace to our national taste, Buckingham Palace, it would be lamentable to stop short at whatever might be required to carry into execution a design, the merits of which are so generally acknowledged.

We do hope, however, that the subject of the site will be reconsidered; for, in addition to the arguments adduced in our preceding Number (p.100.) for not rebuilding the houses on the ancient site, we would ask, whether the magnitude and magnificence of Mr. Barry's plan, or, indeed, of any plan that would answer the purposes intended, would not go far towards eclipsing Westminster Hall and Westminster Abbey. — *Cond.*

The Exhibition of the Designs for the New Houses of Parliament.—A private view of these designs was given March 19., at which we had the pleasure of attending; but, at this late period of the month, we can only spare room for a few remarks. The four successful designs are not yet included in the exhibition; but they will be so in the course of a few days, when we shall pay another visit. The drawings occupy the lower part of the walls of five rooms, which are all exceedingly well lighted from the roof. They do not comprise all the unsuccessful designs, by about half a dozen or a dozen; but, as some were arriving even while we were there, it is more than probable that the whole will ultimately be included.

Our first business was, to take a general glance at all the designs, more especially at the plan of the principal floor, the elevation of the front next the Thames, and the perspective view. After this we went over them a second time, looking more particularly at those which we thought the most remarkable.

In general, we found a deficiency of symmetry, both in the plans and elevations. This, many will doubtless say, is owing to the situation and the existing buildings, and we admit the difficulties which these present; but, nevertheless, some of the authors of the designs have contrived to overcome these difficulties on every front; and by all they might have been overcome on the front adjoining the Thames, had the force of the beauty, and even necessity, of symmetry

been sufficiently felt. Never were we so convinced of the great value of symmetry in giving the expression of design to an assemblage of forms, and in assisting the mind to comprehend a complex object, as after we had glanced over the whole of these plans.

Another general defect is, the want of characteristic expression in the elevations. This fault is the result of placing the two principal apartments, that for the Lords and that for the Commons, in the interior of the pile, so as to be surrounded by other apartments, in such a manner as to afford no pretence for features representing these apartments in the exterior of the building. In several of the plans, this fault, like the preceding one of want of symmetry, has been avoided ; and these plans we consider those most worthy of being studied.

The elevations are generally faulty, from a want of symmetry, of a leading feature in each, more especially in the sky outline, and, above all, from the want of appropriate expression. A considerable number of them, with a very slender license of imagination, may be said to represent the exteriors of cathedrals ; some castellated mansions ; others hospitals ; some gigantic almshouses ; others street houses ; one or two Indian temples ; and some even prisons. In answer to this it may be said, that Houses of Parliament have no recognised expression, which is, doubtless, true ; but Houses of Parliament have certain leading apartments within, which ought to be indicated by certain leading features without. They have a main entrance for the King, another for the Lords, and a third for the Commons ; the two chambers already mentioned, which are main features ; a library to each, with principal staircases, &c., which are additional ones ; all these interior features ought to have been represented, or at least indicated, by features on the exterior ; and this has been done to a certain extent in several of the designs ; but in much the greater number it seems to have been totally lost sight of. It is only by considerations such as these, that any reason, independently of mere picturesque effect, can be rendered, either for breaks in the elevation, for towers in the sky outline, or for windows differing in dimension or proportion from the average forms.

Taking the whole of the designs into view, and testing them by the preceding remarks, with regard to symmetry and characteristic expression, the best design seemed to us to be that of Mr. T. L. Donaldson. In this, the main entrance is on the river front, and is characterised by a lofty spire surmounted by a statue ; while the two chambers form two grand projections in the front line of the elevation, and each is characterised by a gable end, and a large cathedral-like window. The observer instantly recognises in these features the principal entrance of a magnificent public building, and the two principal apartments of that building, whatever may be their use. We say nothing respecting the minor apartments, in this or in any of the other designs, for these we did not look into ; neither do we pretend to say whether the accessories to the two principal apartments, in Mr. Donaldson's design or any other, are well contrived ; we merely speak as to our general impressions from leading features.

We might mention some other designs, in which the general principle developed by Mr. Donaldson has been followed, but with, as it appears to us, less success ; but we shall not do so till we have examined them farther, lest we should be inadvertently unjust.

It appears clear to us, that the greater number of the authors of these designs are deficient in what we call a reasoning taste. Many have taken precedent as a guide for bringing together certain forms ; and a still greater number seem to have had no other aim than that of producing a grand, rich, or picturesque effect in the exterior, without reference to what is within, to use, or to practicability. How any reasonable man could suppose that government would be justified in bestowing their approbation on designs exhibiting such numbers of gorgeous towers and spires, as do some of those in the exhibition before us, we cannot conceive. While we state this, we would not hesitate

at 100,000*l.* more or less, in the execution of a design worthy of the nation, whether Gothic or Grecian; but a number of those in this exhibition we should be sorry to see executed at any price.

The general impression which the whole has left on our minds is, regret that so much exertion was fettered either by the situation or the style. We certainly think a better design than any exhibited in these rooms might be produced in the Italian manner, and one which, we believe, would be far more suitable for the situation; for it is impossible to look at the perspective views of the designs before us, and see the manner in which the towers of Westminster Abbey are brought in, without feeling convinced, either that the new Houses of Parliament will be overpowered by the Abbey, or the Abbey by the new Houses of Parliament. The contrast that would have been produced by a building of modern architecture would have heightened the effect of the Abbey, while its own effect, by its proximity to that building, would have been increased. This subject has been ably treated by Mr. Fowler in our preceding volume (p. 391.); and some forcible observations on the subject, by an architect, one of the exhibitors, have been circulated in a printed paper, a copy of which was given us in the exhibition room, and from which we make the following extracts :—

“An Exhibition is advertised of the Designs for the New Houses of Parliament; and the address of the Committee of Management assumes that such an exhibition ‘will show the state of the architectural talent of the country.’ This is by no means true, as the unfortunate resolution of the Committee of the House of Commons limited the style to be employed to Gothic, or that now-descript, Elizabethan: it will only show the ingenuity with which the architects have tortured the forms of the ecclesiastical architecture of the 12th and 13th centuries to the purposes of a Senate House to be erected in the 19th.

“I only address myself to the style which has been forced upon the architects. I will neither seek favour with the Grecian by comparing, in the language of a lately published, and, in many parts, able pamphlet (See our Vol. II. p. 506.), an assemblage of Gothic buildings to a group of thistles, nor will I sacrifice to the Goth by the endeavour to lower Grecian art: each style may be judiciously employed. My business is with the resolution as it regards the very precise instruction, to exclude all classic art. Put simply and truly in this way, how monstrous, how barbarous, does it not sound!

*“But the site demands it; the contiguity of similar examples would form a harmonious group. Had this reasoning always been admitted, should we now be enabled to admire the celebrated *façade* of the Louvre, the pride of Paris, the admiration of every traveller, directly in front of the Gothic church of St. Germain l’Auxerrois, which now stands as a barrier against the further encroachment of barbarism on the elegant quarter of the Tuilleries? Should we be able to boast of the Banqueting House at Whitehall, a portion of an extensive palace which the refined taste of the unfortunate Charles I. began to erect on a spot which must, at that time, have been full in view of Westminster Hall and Abbey? The fine taste of that monarch saw no such reasons for fettering the genius of Jones with such obsolete forms. That the resolution could never have been canvassed, I am fully convinced. As in Committees, in more ordinary places, a resolution is sometimes conceded to a troublesome member, or made a compromise for some other favourite object, or is passed in haste at a late hour of a prolonged sitting, in some one of these modes must the resolution have been adopted; but, as I do not seek for errors without endeavouring to apply a remedy, I would direct Mr. Barry, the successful candidate, to prepare a classical exterior to his plan, divesting it, of course, of such excrescences as the style alone forced upon him, accompanied by a rough estimate of the difference of expense. As the economist will most assuredly find a diminution of at least one half by the adoption of the classic, so will the country be relieved from the stigma about to be fixed upon it. The arts of elegance will again show their smiling faces; sculpture and painting, now hiding themselves behind the Gothic buttresses of antique barbarity, will again*

start forward, and clap their hands at the reviving prospect of encouragement and renown.

"But while, on the one side, I hear no argument for the Gothic but its uniformity and historical recollections, on the other side these are opposed by others which appear to me unanswerable. In opposition to uniformity is placed contrast, the very soul of harmony. For the monotonous continuity of unvaried forms are placed the variety and taste of new combinations; and it is asked, Where is this Gothomania to stop? Of course, all the vicinity is to be uniform; the front and return of the Law Courts are to be Gothicised; that nondescript building, St. Margaret's Church, must be uniform; the Sessions' House, too, should be made uniform and Gothicised; and Sir Christopher Wren's western towers of the Abbey should be made more pure to the style; and, though last not least, I cannot see why the bridge itself should not be pressed into the service, and complete the national group. When you have thus covered twenty acres with Gothic, where will the eye rest for repose, or the tortured sense escape from the contemplation of the angles, tracery, crotchets, and pinnacles of this forest of stone?

"To this principle of uniformity oppose the principle of contrast. The river front is a thing *per se*; no contiguous building opposes itself to the use of any style: that some Gothic roofs or pinnacles should be seen in the distance above it, can have no weight against its adoption. On the western front, I have stated the difficulty of making a uniform design, without incurring a most unwarrantable expense; but apply the principle of contrast, and the difficulty vanishes.

"I avail myself of the arguments of some of my friends on the question of historical recollections.

"If I pay a visit to Westminster Hall, I immediately recur to the time of William Rufus. If I enter Eltham or Crosby Halls, I carry back my recollection to the histories of the Seventh and Eighth Henrys: but will any historical recollection occur when I enter the new Gothic houses? Certainly not. The buildings insinuate a positive falsity. Is it not meant that the style that has been proposed should convey an idea of the antiquity of the institution; and that in those buildings, for hundreds of years, the Parliament of England assembled. But is not that notion palpably false? Do I not know, does not every schoolboy know, that at that time both Peers and Commons might be accommodated in any two of the largest Committee-rooms? Alas! the historical recollections will be with our posterity, who, some hundred years hence, will wonder at the folly of their forefathers in entailing upon them such a mass of unnecessarily expensive buildings for them to uphold.

"The battle has been fairly fought, and fairly won. Charles Barry is the victor. No one would for a moment dispute his claim; but I now call on Sir Robert Peel, Mr. Hope, and those gentlemen whose taste and education must have taught them to admire the elegance of the Greek, and the variety and probably more useful forms of modern Italian architecture, to propose that Mr. Barry should prepare such an exterior to his plan. Two arguments only oppose themselves to this: the expense and delay. The expense will add two hundred pounds to an outlay of half a million; the delay of six months may relieve ourselves and our posterity from ages of contempt, disappointment, and regret. — *W. B. London, February, 1836.*"

We conclude this preliminary notice by recommending every young architect and amateur to visit this exhibition, and examine the designs in detail; observing how the same points of arrangement have been treated by different minds. Let a young man, for example, first examine how the two chambers have been placed relatively to each other, to the main entrance, and to the exterior walls, throughout all the different designs. Then let him take the general form of the chambers; next the approaches to them; then the rooms more immediately connected with them, such as the Speaker's room, the King's robing-room, &c. In this way, by taking one apartment at a time, and studying that apartment by itself, and relatively to the objects by which it is

surrounded, the mind will be most profitably exercised; and a person who had entered the exhibition rooms with no knowledge of the mode of arranging Houses of Parliament, and their requisite accessories, might, in a few hours, have their minds thoroughly imbued with the subject.

It would add greatly to the interest and usefulness of this exhibition, if a catalogue were published of the different designs; and if in that catalogue each architect were to explain his own design in his own manner. We hope that, at all events, this will be done, should the designs be finally published, whether according to Mr. Weale's mode (which, we hope, will be the case), or not. In the mean time, a descriptive catalogue would not interfere with such a publication, and it would add greatly to the interest of the exhibition. Besides the description of every design by its author, the catalogue ought to contain a copy of the general instructions given by the Committee to the competing architects. In our next, we shall publish an extract from the *Report of the Commissioners*, and examine their reasons for preferring the designs to which they awarded the premiums. — *Contd.*

The Royal Institution. — A subscription has been raised by the members for new fronting and beautifying their house; and Mr. Vulliamy, the architect, has presented the design, drawings, estimate, &c., gratuitously. (*Literary Gazette*, March 19.)

The Mode of heating the Elephant's House in the Zoological Gardens in the Regent's Park. — A mode of heating has been lately adopted with great success, in a new house prepared for the reception of the elephant in the Zoological Gardens, which appears well adapted for warming churches, chapels, and all other buildings having incombustible floors. It is thus described in the *Times*: — "It consists in a common brick drain, which is conducted under the floor around the interior of the building. At the commencement of it there is a hole in the floor to the depth of about 2 ft., such as would be provided for the sink to any common drain; and the other end of the drain, instead of terminating in a sewer, or cesspool, finishes in an upright chimney shaft. A small quantity of fuel is then thrown in what may be called the cesspool at the opening, and lit: the effect is surprising. The downward pressure of the air to the vacuum caused by the fire produces a draught which is equal to that of a furnace. All the smoke being driven down through the fire, is there consumed, and, with the body of heat, rushing through the horizontal drain for the length of 110 ft. before it reaches the upright or chimney shaft, all, or nearly all, the heat transudes through the floor, from which it ascends with as pure a warmth as that from the sun. We understand there is a floor of concrete nearly a foot in thickness over this drain, which, with the large quantity of humidity contained in it, must materially lessen the transmission of the heat: still the warmth is considerable." — *Frederick Lush, Hoxton, January 23, 1836.*

Equestrian Statue of King George the III. — Foundations are being prepared in Pall Mall, and on Waterloo Place side, for an equestrian statue of George III., which is to be of bronze, and mounted upon an appropriate pedestal. — *Tyro. Wilmington Square, March 1, 1836.*

The New Club House in Pall Mall is now finished, and forms rather an interesting architectural feature: it is in the Grecian style, and of two stories in height; the lower story being of the Ionic, and the upper story of the Corinthian order. The balcony to the upper story has an unfinished appearance; and the space between the top and bottom rails is so great, that it appears as if either the bars had fallen out, or that the smith had forgotten to put them in. The hall, staircase, and the interior fittings, are very handsome. — *Id.*

The New Cattle Market, Islington. — Since passing the bill for the establishing of this market, great progress has been made towards its completion. The interior arrangements are nearly finished; and there is one thing worthy of notice, which will make this market very superior to that of Smithfield; viz. to each pen is a trough well supplied with water. Many of the houses

forming the frontage to the market are being erected; and some of them will, in the course of a few weeks, be covered in. When the market is completed, and established, it will not only be a great improvement, by the removal of a nuisance from the city, but quite an architectural feature to this part of the town, and reflect much credit on its proprietor. — *Id.*

Southwark. — New parochial schools are in contemplation, to be erected in the Borough Road, and for the accommodation of 300 boys and 150 girls. The total cost of the building is to be 1200*l.* — *Id.*

Hampshire. — *Southampton.* After boring to the depth of 520 ft., the last 30 ft. through a bed of chalk, a spring of the purest water has been obtained, adequate to the long wished for supply of the town of Southampton. — *Id.*

Middlesex. — *Tottenham.* A new school, situated on Scotland Green, Tottenham, has recently been completed, from the designs and under the superintendence of Mr. Angel; who has displayed much originality in the external composition of the building, although it partakes of the old English style of architecture. The builder was Mr. Miers of Tottenham.

A new Chapel of Ease, in the pointed style of architecture, situated on Tottenham Green, has also lately been erected. The interior is both light and pretty: it has but one gallery, which is situated at the west end; the children occupy part of it; and, when the parish can afford it, an organ is to be placed there. The external design is not so well arranged: for the purpose of making the chapel more prominent, the gable ends were carried up many feet above the roof: the consequence is, that, at a short distance from the building, it has the appearance of not having a roof; and, until you retire a greater distance, you cannot perceive the roof.

In various parts of the village of Tottenham, a good deal of building, considering the size of it, has been going on. Silk mills of a large size have lately been completed by Mr. Herbert of Tottenham, who has been his own architect. He has also built various small houses for his workpeople; and, early in the spring, it is his intention to build a dwelling-house for himself, to be situated near the mills. In other parts of the village, many old wooden buildings have been taken down; and fourth-rate houses, of a town-like character, have been erected in their place. It is a pity that these box-like edifices should be brought into villages like this, when the old English style, or the pointed style, is so much better adapted. In fact, I am well convinced, that, if the owners had in their possession your invaluable *Encyclopædia of Cottage, Farm, and Villa Architecture*, they would not have preferred these ill-looking domiciles. — *Id.*

Somersetshire. — *Bath.* A new bridge, from the designs and under the superintendence of Mr. G. P. Manners, is being projected from the North Parade to the Pulteney Road, over the river Avon. Mr. David Aust, builder, has undertaken the various works. This bridge will be a great accommodation to persons going from the Parade to the Pulteney Road; and, as much money is to be expended in its erection, it will form a very elegant architectural improvement. The present mode of passing the river at this point is by a ferry-boat. — *Id.*

ART. III. Retrospective Criticism.

ERRATA. — In p. 69., in three places, for "curved," read "curbed:" the same mis- take occurs in the General Index of Vol. I. — *F. Lush. February 29. 1836.*

More Competition. (Vol. II. p. 481.) — As another notable specimen of the mode in which competitions are managed, I would instance the invitation to architects to send in designs for the Proprietary School about to be erected at Islington. The advertisement appeared in the papers on the 12th of February last, and the drawings were to be sent in on the 25th; thus allowing barely *twelve days* for preparing a design: a most inadequate space of time, even supposing that a person could devote the entire interval to the purpose. Were he otherwise totally unemployed, an architect might possibly complete the requisite number

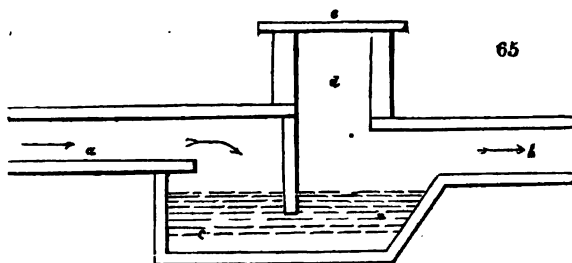
of drawings within that short compass of time; but he would be obliged to adhere to the first ideas that presented themselves; for, most certainly, it would be out of his power either to study his subject well preparatory to commencing it, or to correct his plans while in progress.

The absurdity of this mode of procedure on the part of the committee of management (query, of mismanagement) is glaring enough. At the same time, it must be confessed, that it is sufficiently disinterested, it being evident that a regard alone to their own credit would have induced them to allow far more time for the preparation of designs, in order that the competitors might be able to devote deliberate consideration to their subject, instead of being under the necessity of hurriedly putting together what, however neatly and tastefully they might be delineated on paper, can, in fact, be no more than sketches, more or less crude and imperfect as regards design. Persons who were really solicitous to obtain able plans for their building would hardly act so preposterously, since they must be aware that no one, who had any other engagements to attend to, would submit to the inconvenience they so arbitrarily impose; more particularly for so slight an inducement as the mere chance of obtaining a premium of *twenty guineas*. If it be absolutely necessary that the designs should be sent in on February 25., why were not architects apprised of it two or three months earlier? Hardly is it possible to assign any reasonable cause for such precipitation; and, indeed, it almost looks as if they had actually fixed upon their architect, and only wanted to see whether they could obtain from other quarters some ideas that might possibly enable him to improve upon his own. — *Y. Y.*

The Knowledge of Perspective among Architects. — It is rather marvellous that architects should be so much "out at sea" on the subject of perspective. I quite agree with Scepticus (Vol. II. p. 358.) as to the necessity of meeting the difficulty at the first outset; and should be obliged if he would favour the world with his method of dispensing with vanishing points, when they fall at an inconvenient distance. I have used Nicholson's centrolinead, and sometimes a long ruler, with a D centre to confine the centre pin; but, in general, three distinct instruments are required for a large drawing, as a great loss would occur in shifting the instruments after they are once set, besides the risk of inaccuracy. Writers on perspective do not appear to me to have laid sufficient stress upon the difference between the points of sight and distance being fixed, in contradistinction to their being settled at the will of the artist. The beautiful views in Britton's *Public Buildings of London* are instances where the points of sight and distance are necessarily fixed. Sufficient importance is not attached to having the point of sight opposite to the centre of the picture. Mr. Nicholson says, "The nearer the foot of the perpendicular is to the middle part of the outline, the more agreeable the picture will be." In my view, it is not only more agreeable, but more correct to a common observer. An ignorant person cannot be brought to believe that perspective to be correct, which is not only greater than the original, but is rendered more apparent, as in the case of towers and columns, &c., being greater in their horizontal section the nearer they approach the vanishing point, and, conversely, the farther from the eye: yet such is the case where the point of sight is very oblique to the centre of the picture. I hand you these remarks with diffidence, fearing my expressions may not be strictly mathematical, although I can demonstrate the subject practically. — *W. Thorold. Norwich, January, 1835.*

Air-Trap. — A Junior (Vol. II. p. 330.) finds fault with the air-trap described by Mr. Milne (Vol. II. p. 179.); but, to my mind, it will answer the purpose it professes to do, namely, to prevent smells, &c. A Junior suggests that the dipstone *a* should be left clear of the cover *b* (Vol. II. fig. 167. p. 330.), which renders it entirely useless as an air-trap; and, in point of a vermin-trap, Mr. Milne's method appears to me decidedly the preferable one of the two; but I think that both are defective in a very essential particular. I have executed drains similar to that shown in fig. 65., in a manner which effectually prevents vermin from passing the trap, notwithstanding their diving under the

dipstone, which they frequently do. In *fig. 65.*, *a a* represent the drain, the bottom of which is straight or circular, as the case may be; but it projects at



b, over the water in the trap *c*, from 3 in. to 6 in., which prevents the vermin from passing one way, as will be perceived. The level of the water in the trap is several inches below the under side of the bottom of the drain; and it will be observed, by the direction of the arrows, the way I suppose the water to run in the latter. Although I have said that the bottom of the drain is straight or circular, I do not mean that it is indifferent which method is observed: but we are sometimes forced to bend to circumstances, and to work so as to suit our employer's pocket, or his inclination. I once employed the above method where the bottom was flat, being sunk out of the solid rock. The drain was 4 ft. by 2 ft. inside, and of sufficient height for a man to walk in it to clean it out. The entrance was by a ladder through the trunk *d*, the top of which was covered in with a flat stone *e*, and was 2 ft. below the turf. This drain acts very well, and is still in operation under the terrace in front of a gentleman's house. — *H. A. R.*

ART. IV. *Queries and Answers.*

THE best general Work on Architecture for a Beginner (Vol. I. p. 320.) is the 3rd edition of Nicholson's *Principles of Architecture*, 1827, in 3 vols., and published at 3*l.* 3*s.*, but may now be had for 2*l.* of any architectural bookseller; and, sometimes, may be purchased at a sale for much less. As a supplement to this work, containing many excellent examples on shadows, is Gwilt's *Sciography*; or, *Examples of Shadows*: the 3d edition may be had for about 7*s.* — *Tyro. Wilmington Square.*

Windows. (Vol. I. p. 280.) — If at any time raising the lower edge of windows will prevent the chair-backs from being disfigured, there is not much doubt as to its being a good plan. Whether it be better to have windows reaching to the ground or not, depends upon circumstances. In my opinion, if your drawingroom be situated at the back of the house, and overlooks a lawn, flower-garden, &c., it adds to the liveliness of the room to have the windows reaching to the ground; but, on the contrary, if the views at the back are not so agreeable (as is often the case in London), I should recommend that the windows be not continued to the ground. — *Id.*

Sliding Shutters. — Will any of your correspondents oblige me with the details of the best way of hiding the lines of sliding shutters, which are very frequently hung with pulleys, where there is not sufficient thickness of wall to admit of splayed shutters to the inside of the sash frames? The writer wishes both the lines and shutters to be out of sight in the day-time; the latter, of course, to slide down the window back. — *Eboracum. November, 1835.*

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ORIGINAL COMMUNICATIONS.

ART. I. *On the Institution of Free-Masonry.* By GEORGE GODWIN,
Jun. Esq., Architect, A.I.B.A.

(*Read at the Institute of British Architects, March 14. 1836.*)

"Hail to the craft ! at whose serene command,
The gentle arts in glad obedience stand ;
Hail sacred masonry ! of source divine,
Unerring sov'reign of th' unerring line ;
Who rears vast structures from the womb of Earth,
And gives imperial cities glorious birth !"

Anthem of the Craft.

THERE are few persons who have attentively examined the cathedral churches of Germany, France, and England, those gorgeous monuments of the daring ingenuity and persevering industry of man, but have enquired of themselves, in what state of civilisation was the great mass of the people, how far advanced were the sister sciences and arts, when these stupendous buildings, displaying the most delicate workmanship, the richest fancy, the most cultivated judgment, and the profoundest mathematical skill, were raised ? The feathery fairy-like spires, towering into heaven, and seeming, so beautifully figurative, to connect therewith the dull earth ; the slender and graceful columns holding up, as 't were in sport, the traceried roof ; so easy, yet so confident ; the problem which requires the *maximum* of strength with the *minimum* of materials, every where so admirably solved ; all bespeak an advancement in civilisation equal, at the least, to that of which we boast, even at this period. How great, then, must be the astonishment of every enquirer when he finds that, at this very time, Ignorance, dark as Erebus, with Superstition, her eldest born, usurped the land ; that few could even read ; to be able to write entitled one to the appellation of scholar, and the knowledge of a few elementary principles in physics oftentimes proved but a passport to the stake.*

By what men then, by what *set* of men, differing so from their fellows, were these proud and indubitable evidences of superiority imagined and constructed ? And by what strange chain of circumstances was the knowledge here displayed gained by, and confined to, them alone ? A little farther enquiry shows

* Frederic Barbarossa could not read, nor could John, King of Bohemia (middle of the fourteenth century), nor Philip the Hardy, King of France. (*Hallam.*)

that these buildings were mostly executed by a heterogeneous band of men, Greeks, Italians, French, Flemings, and Germans, who were religiously bound to certain observances, kept up a peculiar system of discipline, and, possessing various protecting bulls from the church of Rome, maintained a perfect independence of the states in which they sojourned. This was the fraternity of Free and Master Masons : to their talents and industry, it need, then, hardly be said, architecture owes much ; but, accustomed to regard them only in the light of a body of men associated for convivial and charitable purposes, we have long since ceased to connect them in any way with the original results of their combination ; and it may not be uninteresting to lay before the lover of archæology a brief view of some points connected with their history and progress.

Were I to adopt the opinion set forth, and, with probability, sincerely entertained by some of the chroniclers of the craft, this account should commence with Ham, the second son of Noah ; and should attempt to show that their first undertaking was the building of the Tower of Babel. The Israelites are by them proved to be a band of Free-Masons, having Moses for grand master ; and the pyramids, with the other mighty works remaining in Egypt, are triumphantly pointed at as the results of their labours. Others, however, more modest, commence with the building of the Temple by Solomon, about 1012 years before Christ ; and contend that Hiram, the widow's son, of the tribe of Napthali, was a master of the craft sent by Hiram, or Huram, King of Tyre, with other of his fellows, to assist Solomon in his tremendous undertaking. From what evidence such a conclusion was satisfactorily arrived at does not appear ; but, finding this opinion is constantly and confidently repeated by the older writers upon the subject, we are compelled to suppose, either that they have all blindly followed a hastily made assertion, or that the fraternity themselves are in the possession of traditions or records inaccessible to the uninitiated : I am strongly inclined, however, to believe the former.

That in Egypt there was an associated body of men, to whom all scientific knowledge was confined, who preserved strict secrecy upon all matters connected with their ordinances, and used symbols familiar only to themselves, appears nearly as certain as that among the Greeks the initiated into the Eleusinian mysteries, so far as regarded their government and the lessons inculcated, also closely resembled the free-masons ; but this is all that we know. At these last-mentioned and celebrated festivals, viz. those of Eleusis, the origin of which is attributed to Ceres, the neophyte about to be admitted underwent, as among the masons, an ordeal of no common severity ; the principles of probity, charity, and humanity were impressed upon his mind, and the secrets of the mysteries were sworn by him to be held sacred. The tenets of the initiate we find, too, were not confined to Eleusis ; for, about 1300 years before our era, says one (Laaric's *Hist. of Freemasonry*), they reached Athens, and, ultimately, France, and, probably, Britain ; but in the records of this association we can discover no evidence of that which appears to have been the one great object of the fraternity of masons, namely, the study and practice of geometry and architecture ; terms which, as they say, were with them synonymous, and comprehended the basis of all their proceedings. With the initiated of Eleusis it is hardly possible, therefore, to connect the free-masons ; but, coming on to rather later times, we see that the disciples of the Dionysian mysteries, instituted in honour of Bacchus, to the due celebration of whose festival we owe the invention of theatres, were men intimately connected with science : they were termed the *Dionysiac artificers* ; and, as a body, possessed the exclusive privilege of erecting temples and theatres in Asia Minor. These artificers were incorporated at Teos by the kings of Pergamus, where they built a magnificent temple to Bacchus ; sufficient of which even yet remains to attest its grandeur, and to justify the terms in which Vitruvius speaks of its splendour. (See the Introduction to Wilkin's *Vitruvius*.) By them, also, it is supposed by some, the Doric and

ionic orders were invented. They used symbols known only to themselves; at certain periods met for convivial purposes; and, according to some accounts, were actually divided into lodges, governed by chief officers; thus agreeing, in many respects, with the fraternity under notice; so much so, in fact, that even Robison, the most vigorous modern enemy that freemasonry has had, and who would not, therefore, yield to it a greater degree of antiquity than he felt himself compelled to concede, admits that in this association it had, at all events, its prototype. (See Chandler's *Travels in Asia Minor*, and Robison's *Proofs*, &c.)

Whether members of the same body or not, it is certain that, in later times, at Rome, the artificers were bound together in a somewhat similar manner; having colleges, or lodges, where they held their meetings, and studied the principles and practice of architecture: it does not, however, appear quite clear to me whether these colleges were part and parcel of a general body acknowledging one supreme head, or whether they were not independent associations of men organised for the study of their art; sometimes by the authority of the reigning emperor, and sometimes by private individuals. A passage from Pliny (as quoted by Dalloway), wherein he requests Trajan to establish a college of artificers (*collegium fabrorum*), in order to effect the rebuilding of Nicomedia, just then destroyed by fire, and in which passage no reference is made to any association actually existing of which this was to form a part, seems to express that such a proceeding was not uncommon, and to justify in some degree the doubt.

There is a passage in Gibbon which appears to me to bear a little upon the subject of associated artificers, and, perhaps, deserves mention. He says, when Probus commanded in Egypt, A. D. 260, he executed many considerable works for the splendour and benefit of that rich country. The navigation of the Nile, so important to Rome itself, was improved, and temples, bridges, porticoes, and palaces were constructed by the hands of the soldiers, who acted by turns as architects, engineers, and husbandmen." (*Decline and Fall*, &c., vol. ii. p. 89.)

Rome fell! Torn by internal faction, and enervated alike morally and physically by her very triumphs, the mother of many nations slowly succumbed to the barbarian hordes, innumerable, which the North, at that time, poured forth upon the world. All art was stagnated, frozen by their chill influence, and long and sad was the dark winter that then ensued.

When Constantine, at the commencement of the fourth century, removed the seat of empire to Byzantium, or Constantinople, as it was afterwards termed (the last blow which severed prosperity and Rome), he employed the whole energy of the nation to beautify and adorn his new city: 2,500,000L. were set apart by him for the construction of the walls, porticoes, and aqueducts; and, says Gibbon, "a multitude of labourers and artificers urged the conclusion of the work with incessant toil. The impatience of Constantine, however," he continues, "soon discovered that, in the decline of the arts, the skill as well as numbers of his architects bore a very unequal proportion to the greatness of his designs; and the authorities of the most distant provinces were therefore directed to institute schools, to appoint professors, and, by the hopes of rewards and privileges, to engage in the study and practice of architecture a sufficient number of ingenious youths, who had received a liberal education." This law is dated A. D. 334, and was addressed to the prefect of all Italy, whose jurisdiction extended even to Africa; so that its results, we may suppose, must have been great. Here, then, I conceive, we obtain a starting point, presenting fewer difficulties than any we have yet seen; and, without going into the question, as to whether the professors appointed to superintend and organise these colleges were not actually remnants of the more ancient associations previously mentioned, and who initiated the students into their own mysteries, thus accounting for the coincidences already pointed out, I am contented to believe that in the members of these we have the ancestors of that body of men more immediately under consideration, the

Free-Masons of the middle ages. In Constantinople, as is known, a vast change was effected in architecture. Unfettered by the restraints which, at Rome, paganism and want of space had put upon them, the Christian architects determined upon an entire change of forms in their religious edifices, and the cross of equal sides, surmounted at the junction by a majestic cupola borne on arches, became the most striking characteristic of their style. In Constantinople, as we know, the sciences flourished for some time, in a greater degree than elsewhere; her men of learning were sought by European as well as Asiatic nations, and her architecture was copied on all sides. Many of its characteristic features came even beyond the Alps, and were taken up by the Lombards; so much so, indeed, that Hope declares, that when, upon entering the ancient city of Cologne, he saw the east end of the Apostle's Church, he almost thought himself again at Constantinople. (*Hist. of Architecture.*) Its less details may be found in nearly all the various states of Italy.

Let us now turn for a brief space to England, where, according to the chroniclers, free-masons were early to be found. One writer has ventured the opinion that the Druids had a somewhat similar association, using like symbols, and practising architecture, into which they had been initiated by disciples of Pythagoras: and Preston, in his *Illustrations of Masonry* (though, it appears, from his enthusiasm on the subject, he might easily have been deceived himself, even if not desirous to deceive others), mentions an old MS., which said that St. Alban, who was beheaded A. D. 303, "loved masons well, and cherished them much;" and that he used his influence to obtain a charter from the king enabling them to hold an assembly. Of these and many other assertions, however, such as those regarding the foundation of the old cathedral of Canterbury by the craft in 600, that of Rochester in 602, and that of St. Peter, Westminster, in 605, &c., we have no proof; the authentic records, in most cases, having been destroyed. The time from which, as it appears to me, we can, with the greatest assurance, date the appearance of the free-masons in this country, is in the ninth century of the Christian era; although members of the Dionysiac and other mysteries, that came over to Britain with the various missionaries from Rome, may have been, nay, probably were, established here long previously; and notwithstanding Dr. Henry says (*Hist. of Great Brit.*, vol. iv.) that masonry was restored, and some other arts connected with it brought to England, towards the end of the seventh century by two clergymen, who were great travellers, and had often visited Rome, where they had acquired some taste for these arts. These were the famous Wilfred, Bishop of York, and afterwards of Hexham, and Benedict Biscop, founder of the Abbey of Weremouth. Biscop, it is certain, several times journeyed to Rome to persuade artificers to come to England; but I find nothing to identify these workmen with the fraternity under consideration.

Alfred, so truly termed the Great, among other admirable endeavours to ameliorate the condition of his people (endeavours which, had they been sufficiently advanced to cooperate with him, would have placed England a hundred years forward on her progress towards civilisation), strove to improve the domestic architecture of the country. At that time use was made of hardly anything for building but timber; a house of stone being regarded as a sort of wonder: Alfred, however, invited the most noted architects from foreign countries to repair to Britain, with workmen eminent in the arts, and raised his palaces of stone and brick; an example which, by degrees, was followed by the nobility. (Rapin's *Hist. of England.*) At the commencement of this same century, Charlemagne, in like manner, on the Continent, had summoned men of all nations to build his celebrated church at Aix la Chapelle; after which events the existence of the fraternity of free-masons, under that title, is no longer doubtful; and the results of that existence are seen in a multiplicity of splendid structures, erected with amazing rapidity, and displaying the origin, progress, and perfection of an entirely new and exquisite style of architecture, viz. the pointed. It is, most probably, from the strict secrecy under which all their proceedings were conducted, that so

much doubt exists respecting the first introduction of this style. It appears clear, however, that, although the pointed style appeared nearly simultaneously in Germany, France, and England, it is in the first of these three, viz. in Germany, that we must look for the earliest examples. This, however, is not a subject now to be entered upon. (See, on this head, Hope's *History of Architecture*.)

In the states of Lombardy, as we know, commerce, the offspring of industry, first gradually threw off the weight under which prosperity had been pressed to the earth by anarchy and barbarism since the overthrow of the Roman empire; and architecture and masonry, with the other sciences and arts, were again studied. This being the case, and the Lombardians, having before them the experience, and among them some of the descendants, of the modern Greek or Constantinopolitan school, which, as we have seen, had attained a certain degree of perfection under the fostering hand of Constantine and his successors, they soon became, as a natural consequence, not only the merchants of the world, but its builders; being eagerly sought for, when their own market was overstocked and they appeared disposed to travel in search of employment, by all the potentates of adjoining nations, who were at that time universally employed in raising religious edifices.

Wherever and whenever a missionary was despatched from the pope to preach the Christian doctrine (and these were every day departing), to that place speedily resorted a band of these wandering architects, under the special direction of the most expert craftsman among them, whom they denominated the *Master*, to raise a fitting temple to the Deity. So numerous, however, were the demands for their services, that their numbers were found to be inadequate to the purposes of religion; and the Church of Rome, which must fully have felt how important a part of its machinery they at that time were, saw that some measures were necessary in order to swell their ranks, and protect them in the undisturbed exercise of their duties. Bulls were accordingly issued endowing them with various rights and immunities: exemption was granted them from the laws of all local authorities; and those who opposed or interfered with their purpose were loudly threatened with excommunication. This proceeding speedily had the desired effect: Greek, Flemish, Italian, and German artists joined the main body, and were initiated into their mysteries; and, it is supposed, from this exemption from all local enactments, and the right to roam from place to place as they might feel inclined, or their interest lead them, they entitled themselves Free-Masons.

That the pope did really confer upon them these privileges has been questioned, and, perhaps, with some show of reason; for it appears that, upon searching the Vatican for the purpose of discovering the bulls stated to have been published, none were to be found: the many and clearly apparent reasons, however, which should have induced the pope so to do; the constant reiteration of the circumstance by the chroniclers of the craft; and the fact that they did so quietly and independently pursue their labours in various countries, and in no very settled times, strongly induce me to put confidence in the assertion. Again, too, we find it recorded in Dodsworth's *Account of Salisbury*, as quoted by Britton, that, even in later times (1244), the Archbishop of Canterbury granted an indulgence of forty days to such as aided the new and wonderful structure of the Church of Sarum; which, the proclamation went on to say, could not be completed with the same grandeur without the assistance of the faithful: a fact which affords, as it appears to me, a strong collateral evidence in favour of the generally received statement.

This quotation, too, may also serve in some degree to explain to us the means which were used, builders being now provided, to raise sufficient sums for the construction of those magnificent edifices, which, for want of like resources, and, I may almost say, for want of these alone, are now beyond our imitation.

The Church of Rome has ever perceived the more speedy influence that is to be gained over men by appealing to their senses than to their reason

and the continual use made in her rites of striking and mystic ceremonies (gazed upon with expectant fear, because, at that time, at all events, they were not understood), of the mind-bewildering incense, and of the exciting and awe-inspiring chaunts, now but softly murmuring as a breath, then peeling forth as 't were a whirlwind, and carrying with them the senses of the listening votaries, clearly shows how fully and how systematically she has acted upon this knowledge. A sublime and lofty structure, then, dimly though richly lighted through glass of many colours, by which was cast an artificial glow on the magnificent paintings, sculptured monuments, and gilded decorations, with which its interior teemed, was found to be no trifling adjunct in the process; and the whole power of the church was employed, as I have already said, in erecting such edifices, and inciting a spirit to "go and do likewise" throughout the world. Bulls were published dispensing with a portion of all penances for sin to those who contributed to raise a church: men were taught that Heaven's pardon could be purchased, that God could be bribed to wink at sin, by adequate donations to his church; and eloquent monks were despatched all over the world to inflame the ardour of the pious, and persuade or frighten, as the case might be, those who yet remained undecided.

Great indeed were the results; the land was as one workshop, and a man feared he had lived in vain had he not contributed to erect or adorn a religious house. (*William of Malmesbury.*) So profusely generous, indeed, were the grants made alike by prince, peer, and peasant, that it has been shown, to speak of England alone, that, at the death of Edward the Confessor, more than one third of all the land was in possession of the clergy; exempt from all taxes, and, for the most part, even from military service. (*Henry's Hist. of Great Britain.*)

The free-masons, as we have seen, were the instruments employed to effect these purposes of the church; and nobly they fulfilled their duty. Passing their earlier works in Lombardy and Germany, in which are to be discovered the germ of the pointed style and its first developement, I would just direct attention to the cathedrals of Strasburg, Friburg, Cologne, Antwerp, St. Ouen, in Normandy, and that *orbis miraculum*, as Leland calls it, Henry the Seventh's Chapel, in England. To mention all the works of the freemasons were to speak of nearly all the edifices constructed during several centuries of that period, and would fill a volume; but the above may serve for instances of their wondrous genius as designers, and of their mathematical skill as constructors; astonishing us alike by the boldness of the outline and the grandeur of the masses, as by the lightness of the parts and the elegance of the execution.

In England, although I do not find that any additional privileges were extended to them by special enactment, few buildings were erected during the twelfth and the three following centuries without the assistance of members of the craft: in fact, the requisite skill appears to the last to have been confined to them; and some idea may be formed of their numbers, when we see that, during the thirteenth century, no less than ten cathedrals were in progress simultaneously. (*Dibdin's Tour.*)

Having thus briefly spoken of the origin and object of the fraternity of free-masons, traced, in some degree, their progress, and mentioned the results of their labours, I shall next attempt to bring together some few points of information regarding their internal government. As a consequence naturally resulting from the mystery with which they enshrouded all their proceedings, the authorities on this head are very few; collecting and collating, however, all that can be found, it would appear that a regular system of science, handed down to them from early times, and added to by almost each possessor, was taught in their lodges; and that of this system geometry (considered by them the first and noblest of the sciences) was the basis. The strictest morality was inculcated at their meetings; and the ancient charges by which they were governed display an uprightness of conduct much to be admired. "Let no master," says one, "take on him no Lord's worke, nor any other man's,

unless he know himself well able to perform that worke, so that the craft have no slander;” a caution seen by no means to be disregarded, when we find in Dugdale and in Rymer the free-mason stipulating in his contracts, “to yield up hys body to prison at my Lord’s wyll” in case of nonperformance. Another enjoins, not to supersede a brother mason, or to work for less than the established rate; and a third impresses the necessity of humility of behaviour and general kindness to all men.

When a band departed on an undertaking, a charge provided that the most expert craftsman should be appointed *Master of the Works*; under whom, when they reached their destination, every tenth man was appointed warden over his nine fellows; a camp near the spot was erected, and a lodge built in which to hold their meetings and regulate their prices; for, as we have already seen, no local enactments had control over them: here, also, the apprentices resorted at certain periods to hear discourses upon the sciences and lectures on morality; for at this period, I should have said, it is supposed that none could become a free and accepted mason without serving and studying under a master, as an apprentice, for seven years; during which time he was gradually initiated into the mysteries, and was ultimately accepted as a brother.

With respect to the mechanical aids employed by the fraternity, it has been supposed, from the fact that nearly all their buildings are constructed of small stones, that, although they possessed and understood the windlass and other contrivances, they never used them, each stone being taken up the ladder by a man. Some little time since, however, I met with an old picture, I think of the fourteenth century, in the University at Brussels, in which is represented a body of free-masons who are employed in erecting a church, and who are attacked by Lucifer and his fiends, with a view to prevent the consummation of their purpose; and here the men are seen employed in raising the stones to the top of the building by means of pulleys and windlasses, while others are moving the larger blocks with levers and rollers. The instruments used by the men who are mixing the mortar and raising it into a heap are precisely similar to those at present employed, as are the tools seen in the hands of the masons who are carving the ornamental portions.

From all that can be gathered, the free-masons appear to have worked with the most persevering industry, applying their whole energy and skill to the task in hand; and Wren, who, in after-times, was himself a master of the craft, says, “Those who have seen the accounts in records of the charge of some of our old cathedrals, near 400 years old, cannot but have a great esteem for their economy, and admire how soon they erected such lofty structures.” (*Parentalia*, p. 306.) From various circumstances, many have supposed that the use of detailed drawings, for the guidance of the workman in the construction of a building, is of comparatively recent origin; or, at all events, that it was not common among the free-masons of the middle ages: the general design was described by him from whom the idea emanated; and the filling up, the nature of the ornaments, &c., were left, they have supposed, to the skill and caprice of the various artificers employed; whence, say they, the infinite variety to be found in their buildings. This, however, was not the case, as there are many documents remaining to attest. Even so early as the building of the Temple, we find David giving to Solomon, his son, *a pattern for the porch*, and others for the treasuries, the upper chambers, and inner parlours. (1 *Chronicles*, c. 28.) Carter, in his *Architecture of England*, says there is a basso relievo of high antiquity in the Cathedral of Worcester, in which is represented an architect presenting his plan, marked on a tablet, to the superior of a monastery; and we find in Henry VII.’s will, as quoted by Britton (*Architectural Antiquities*, vol. v.), that the Prior of St. Bartholomew is expressly called “master of the works,” with reference to his chapel; and mention is made of the designs for images in picture delivered. To crown all, however, I have lately seen, among the archives at Darmstadt, the original drawing for that splendid promise, Cologne Cathedral, in which every orna-

ment, however minute, is scrupulously delineated to a scale. This drawing, which is 12 ft. or 14 ft. long, was discovered in a somewhat singular manner by the venerable and talented author of the *Memorials of German Gothic Architecture*, Hof-Bau-Director Moller; by whom, having first made a copy, it was deposited in the library of his patron the Duke of Darmstadt. That many similar documents have not been found is not because they have never existed, but that, from various causes, they have been since destroyed. The thick veil under which the free-masons have ever desired to conceal their proceedings has naturally led them, whenever attacks made by reigning authorities on the power of the craft induced them to fear an attempt to wrench from them their secrets, to destroy all documents in any way connected with their art; among which, of course, would be included the various details and calculations with regard to construction; the chief results of a knowledge so superior to that possessed by the general body, and as such, therefore, zealously guarded by them. These occasions, too, have not been seldom; for, although for some time, when their skill was most wanted, they were protected by the pope, met with encouragement on all sides, and were able to sing —

“ High honour to masons the craft daily brings;
We’re brothers of princes, and fellows of kings,”

the pressing need for their services gradually was lessened; the pope withdrew his countenance; and, as an associated body of men bound together by certain and secret ties, and acting, therefore, in concert, they were soon looked upon with suspicious eyes by the various despotic governors of the time; and were often persecuted with extreme rigour, under the pretence that their secret meetings were used to cover treachery. Even in the time of the Romans, Trajan, in answer to Pliny’s epistle, already quoted, in which he advises him to establish a college of artificers, consisting only of 150 men, and assures him he will take care none but artificers are admitted, declines doing so, on the ground that the secrecy which attends their proceedings, and the consequent facility for plotting, would always render them dangerous.

In England the free-masons have been seldom interfered with by the authorities, except on account of their disregard for those ordinances which regulated the wages of labourers; holding themselves, as we have seen, perfectly independent on that head, on the presumed authority of the pope’s bull: but we find, in consequence of this, that in the reign of Henry VI., although the king, four years afterwards, became a mason himself, a statute was passed, enacting, that persons calling or holding chapters should be declared felons; and all other masons assembling “*soient punis par emprisonnement de le corps, et facent fyn et rancheon à la volonté du roi.*” (Pownall’s *Essay Archæologia*, vol. ix.) To go into this portion of their history, however (which does not immediately concern our purpose), would too widely extend the limits of a paper already, in length, exceeding my original intentions.

Masonry, in the sixteenth century, had passed its meridian, but continued to remain, the shadow of itself, until the end of the seventeenth; when, a proposition having passed that its privileges should no longer be confined to operative masons, but extend to men of all professions, it became immediately changed in its essential points, and is now hardly remembered other than as a convivial association. Here, then, must I conclude this present notice. There are, as it appears to me, few points in the history of the middle ages more pleasing to look back upon than the existence of the associated masons; they are the bright spot in the general darkness of that period; the patch of verdure where all around is barren: we see the demand for a particular skill instantly creating a plentiful supply; and watch the fraternity toiling on resolutely and successfully in the perfecting of that skill, just so long as the demand continued: it is, in fact, a subject so rife with matter for instructive contemplation, so full of important lessons, that no one can sit down to its investigation without advantage. In studying the works of the free-masons, they

become additionally interesting if we have a knowledge of the men; and the men, in like manner, are invested with greater importance when we reflect upon their wonderful productions.

I need give no other reason for calling attention to the Free-Masons.

ART. II. *Remarks on the unsuccessful Designs for the new Houses of Parliament, now exhibiting in the National Gallery, Charing Cross.* By B.

[We have purposely deferred any further remarks of our own on this exhibition, partly in the hope of seeing the successful designs, but principally because, agreeably to our suggestion (p. 189.), a catalogue of the designs is about to be published, in which each architect will explain his own design. We shall then be enabled to test each design by the intentions of its author. In the mean time, we publish the following observations, which have been sent to us by a correspondent.]

THE exhibition of the rejected designs for the new Houses of Parliament has now been opened for some time; and the public have had an opportunity of judging from it of the architectural talent in the country. Among the seventy-eight exhibitors, a great deal of architectural and antiquarian knowledge has been shown; and, when we consider that these are but a very small portion of the profession, and that among them there are many tyros, I think the exhibition argues that there is more talent in the country than was generally supposed. The reason why the competitors were not more numerous must be obvious to every one: this competition has, possibly, been fair; but the manner in which many previous competitions have been decided was quite sufficient to deter many talented men from entering this.

Upon taking a general view of the designs, the prevailing fault found in most of them is want of fitness; that is, they are almost all too ecclesiastical in their character. It will be said, probably, in answer to this, that cathedrals are the only Gothic examples that architects have to study, as there are no ancient senate houses: so much the better, I should say, since, having no buildings to copy from, you will be forced to think; and it is then probable that you will invent something new. Where will you find ancient examples for the customs, comforts, and improvements of modern times? Are we not to have also improvements in our architecture; or is it out of the power of architects to invent? Is architecture incapable of improvement? Did the freemasons of the sixteenth century show that they could not alter, and make a distinct style from the architecture of the fifteenth century? They did alter, and adapt ancient architecture to the wants of their times; and yet they preserved the same character.

As customs altered, so did architecture; but the acme of architecture of the present day appears to be considered as a perfect copy of some well-known beautiful edifice; if not in its general form, always in the details. If the free-masons had thought in this way, where should we have found the elegance and grandeur of a York Cathedral, the airy loftiness of a Salisbury spire, or the web-like tracery of a Henry the Seventh's Chapel? Is it beyond human power to produce some new system of architecture? Surely not. Preserve all your ancient buildings; store them up as words belonging to the language of your art; but use these words only to compose new sentences; and do not reproduce those already known; for, if you do, what will posterity say of you? That you could copy well in the nineteenth century, but you could not invent.

Britton's *Antiquities of Great Britain* appears to have been ransacked for precedents by the competing architects; and in almost every design we find

fragments from all the well-known cathedrals ; arranged with a 'great deal of antiquarian precision, but with very little originality, and some indifferent grouping. In most of the designs, a deficiency of grouping, and a want of unity and expression are the faults. Spires I should expect in a cathedral, but hardly in a senate house. It is exceedingly difficult to say which design possesses most merit : all should be looked at ; but, among those deserving most notice, are the following, which I enumerate, premising that I speak merely of the exterior at present ; and, when the promised catalogues are out, it will be much easier to form an opinion of the plans. The design of Burrel and Lugar is very showy, and groups pretty well ; but it is rather too much fretted away, and it wants repose. I think, in execution, the details would be deficient. Mr. Cockerell's design has some beauties in it ; and, in the perspective, the design is greatly indebted to two immense domes for its unity : take these away, and what is the design ? It is a pity that the Elizabethan character is not properly established by architects. Look at Mr. Cockerell's, Mr. James Hakewill's, and Mr. Salvin's Elizabethan designs, as they are all called, and see the wide difference between them. Perhaps Mr. Cockerell's is nearest to the style ; the other two gentlemen being at the opposite extremes. Mr. Hakewill's design is extremely poor ; and, though Mr. Salvin's possesses a good deal of originality, and some grandeur, it would look infinitely better as a state prison or an hospital, than as a senate house : there are some picturesque parts about it, and it is a style that would suit a moderate-sized dwelling, but hardly a public building, and more especially one like that in question. Mr. Cockerell's design is also characterised by a clock tower. [This clock tower is in imitation of that which was erected and "furnished with a clock in the reign of Edward I. See Britton and Brayley's *History, &c., of the late Houses of Parliament* : an excellent and interesting work, the concluding number of which was published April 1.] In Mr. Cottingham's designs the buildings are scattered about in such a way, that you can get no pleasing view of them ; but, by the help of a little manœuvre, he makes one good group in his design. A spire is placed on Westminster Abbey, and it just comes in the centre of the Speaker's house, at that particular point which the view is taken from ; but move a little to the right or left, and the charm is gone. Certainly, it would be an additional beauty to the Abbey ; but why take Salisbury spire as a model. This design is overpowered with gigantic buttresses and pinnacles ; and there is little in it to satisfy the general observer, except that it covers a large portion of the wall of the exhibition room. Mr. Cottingham has given his idea as to the restoration of St. Stephen's Chapel ; and it is amusing to see the different ideas on this subject, no two being alike : and, when it is restored, will it be in its pristine form ? It must be entirely rebuilt from the crypt ; and is it desirable ? Would it not be better to preserve the ancient fragments in the entrance court of the British Museum ; they would there be useful ?

Mr. Donaldson's design possesses many of the requisites in architecture, and the unity is preserved ; but still I do not admire the spire in this composition ; his houses on each side are, also, too much like chapels, and their connexion with the sides, I think, is not quite in harmony.

In Mr. Ferrey's design there is an elaborate confusion pervading the whole composition ; but still, like most of the designs, it possesses many beautiful parts. Mr. Graham's design is quite divided into two parts, the only connexion being a long gallery ; so that it appears to be two distinct buildings. Mr. Hopper has collected all the pinnacles he could of the fourteenth century, and placed them at the top of his building, like a park fence.

In the design of Messrs. Kendall and Hopkins there is much to please the general observer ; but it would require very great modification before it could be executed. The pinnacles and caps are gigantic. There is a good deal of originality in parts of the design, and something of what might be called poetic feeling. Mr. Pennethorne's might be mistaken for a large foreign cathedral. Mr. Robinson's design requires expression : there are many beauties in it ; but

it is not good as a whole : it is a combination of cottages. Mr. Wallace will come in for a share of commendation for parts of his design ; Mr. Lamb, for unity of expression [and, we may add, for correct drawing, and general good arrangement] ; and Mr. Bardwell, for some good parts. In most of the designs, indeed, there are some beauties ; and the comparisons which the exhibition affords will give the public an idea of judging of the merits of architectural composition. In this elaborate subject, with the many difficulties the architects must have had to contend with, and the little encouragement they expected from the general manner of deciding these competitions, the exhibitors have shown a great deal of perseverance in completing so many meritorious designs ; and a knowledge of the architecture of the country, that will always be an honourable reflection to most of them.

London, April 6. 1836.

ART. III. *Improvements and Contrivances.* By W. H. L.

ALTHOUGH W. S. has not distinctly stated such to be the case, it may be presumed the windows he mentions (p. 168.) have double sashes, the space between the two being occupied by plants and flowers in pots ; but then, unless the inner sash be flush with the inner face of the wall, or else the wall itself exceedingly thick, the two sashes could hardly be so wide apart as to admit of a range of flower-pots, much less of plants growing between them. If, again, the inner sash is fixed according to the mode I conjecture, so as to form a glazed door, enclosing the window, there can be no shutters ; and, although curtains alone might be deemed sufficient, still, hanging, as they must do, immediately against the glass, when drawn before the window, the latter, I should think, would be liable to be frequently broken, owing to strangers not being aware that there was a surface of glass in immediate contact with the drapery. Two other circumstances as to which W. S. leaves the reader in doubt are, whether the windows come down to the floor of the room, or not ; and whether the external sashes are entirely filled with ground glass, or only to such a height as suffices to exclude the view of unsightly objects : neither of them is of any moment, otherwise than as regards effect ; for, if the plants are raised above the floor, the recesses would not have much the character of small conservatories ; besides which, they would darken the room ; so, also, on the other hand, if the windows are entirely filled with ground glass, the light would be hardly sufficient for a sitting-room.

The contrivance recommended by W. S. could be put into practice, without the inconveniences apparently attending it, by affixing to the lower half of a window a frame glazed with ground glass, and two or three feet in depth ; for, as external appearance would, in such cases, be of no consequence, it would be of no matter were the frame to project considerably beyond the face of the external wall, care, of course, being taken that its

bottom be supported like that of a balcony; and, in fact, such external recess would be an enclosed projecting balcony. Nay, it would, perhaps, be still better to form a veranda at once, glazed with ground glass to such a height as would shut out the view of all objectionable objects; leaving the upper part quite open for the admission of air, but yet glazing the roof of the veranda, in order to obstruct the light into the room as little as possible.

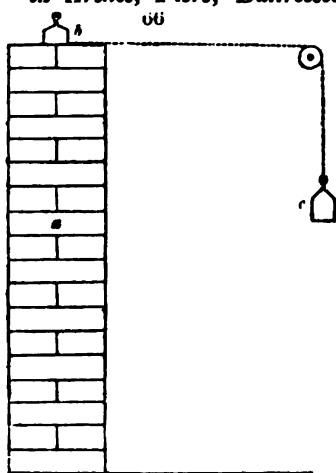
Various improvements on the same scheme will, doubtless, suggest themselves to others; and, therefore, W. S. deserves our thanks for having communicated it. In all probability, there are many ingenious and clever contrivances, which, having been adopted only on individual occasions, are very little known, although some of them might be worth bringing into general use. Information respecting matters of this sort would be highly desirable in such a publication as the *Architectural Magazine*; since, for want of being recorded in print, the things themselves are liable to be forgotten; and it may be here observed, *en passant*, that nothing answering to the term "contrivances" is touched upon in books on architecture; consequently, we are left to collect such particulars according as either chance may bring them to our notice, or enquiry direct us to them.

By way of setting a good example, and furnishing some slight contribution of the kind myself, I will here describe a very pleasing and well-imagined effect I have witnessed myself. A friend of mine, wanting to admit light into a narrow passage through a door at one end of it, had an aperture made in the door, which he filled with a plate of glass, and surrounded with a gilt picture-frame. Facing this aperture, and at about 3 ft. from it, he hung a large water-colour drawing, upon which the light was thrown immediately from above, through a small panel skylight in the ceiling. Thus, as the edges of the drawing (it being so much larger than the glazed aperture) could not be discerned till a person nearly reached the door, the frame seemed to contain a very brilliant self-illuminated picture, of which the eye took in more and more as it came closer to it. To produce such effect, it should be observed that some peculiarity of situation is requisite, since the light ought to strike directly on the picture from above; or if from the side, it must be equally close to it: and the picture, again, must not only be opposite, but at a very short distance behind the door; unless, indeed, the painting should be of such dimensions that, though hanging on the opposite side of the inner room, it would seem completely to fill up the glazed aperture. In order, therefore, that it may be understood how this is managed in the instance here referred to, it should be stated, that the door from the passage leads into a recess about 3 ft. square, one side of which is open to a small anteroom, partly lighted from

the recess itself; and the picture hangs on that side of the recess which faces the door. It is hardly necessary to observe, that the latter is made to open outwards, and not into the recess. The anteroom itself exhibits, also, a good deal of contrivance in regard to uniting a pleasing degree of tasteful display with very little cost. The walls are shelved to about $6\frac{1}{2}$ ft. high, for books; and above the cornice of this shelving is placed a series of plaster busts. At each angle of the room there is, also, a small whole-length plaster figure, standing on a pedestal formed by a mere deal framing covered with crimson cloth, and finished below with base mouldings painted white. On the front of each pedestal is an olive wreath in chiaroscuro, on paper, cut out and pasted on the cloth. The cornice of the room is a mere narrow moulding; but there is a broad architectural border on the ceiling, executed in the same manner as the paper for hanging rooms; and the ceiling itself is slightly tinted of a reddish hue. The floor is covered with India matting, bordered by two edgings of crimson cloth, put about 18 in. apart. The furniture consists of only two light chairs with crimson cloth cushions, standing next a table in the centre of the room; and the last-mentioned piece of furniture has a table-cover which, in its pattern and colour, is in the style of a rich Indian carpet. The *ensemble* is as striking as it is pleasing; and, perhaps, all the more so, because produced by such apparently inadequate means, and at a cost comparatively trifling.

London, April 16. 1836.

ART. IV. *Experimental Essays on the Principles of Construction in Arches, Piers, Buttresses, &c.* By WILLIAM BLAND, Esq.
 Essay III. *Of the Laws relative to Piers and Buttresses.*

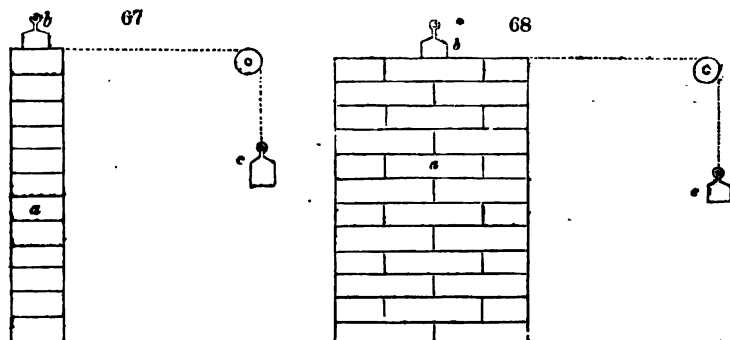


FIRSTLY. — The diagram *fig. 66.*, drawn to the scale of one eighth of an inch to an inch, represents a pier (*a*), which is composed of wooden bricks, eight of which weigh 1 lb. This pier has a weight (*b*) on the top; and a string, pulley, and weight (*c*) at the end, to measure the lateral or horizontal force up to the balancing point. The following are the results of the first experiment: —

Height of the pier.	Dimensions of the pier.	Weight of the pier.	Weight on the top of the pier.	Balancing lateral force.	The proportion of the lateral force to the weight of the pier, and the weight placed on the top of it.
18 in.	4 in. by 4 in.	$4\frac{1}{2}$ lb.	1 lb.	$\frac{1}{2}$ lb.	$\frac{1}{2}$ part.
18	4 ... 4	$4\frac{1}{2}$	2	$\frac{1}{6}$	$\frac{1}{11}$
18	4 ... 4	$4\frac{1}{2}$	4	$\frac{2}{3}$	$\frac{1}{22}$
18	4 ... 4	$4\frac{1}{2}$	8	$\frac{1}{6}$	$\frac{1}{26}$

On reducing the height of the pier three courses of bricks at a time, and with a weight of only 1 lb. placed on the top of it, the results of the lateral forces were as follows : —

Height of the pier.	Dimensions of the pier.	Weight of the pier.	Weight on the top of the pier.	Balancing lateral force.	The proportion of the lateral force to the weight of the pier, and the weight placed on the top of it.
15 in.	4 in. by 4 in.	$3\frac{3}{4}$ lb.	1 lb.	$\frac{1}{6}$ lb.	$\frac{1}{13}$ part.
12	4 ... 4	3	1	$\frac{3}{8}$	$\frac{1}{11}$
9	4 ... 4	$2\frac{1}{4}$	1	$\frac{1}{2}$	$\frac{1}{8}$
6	4 ... 4	$1\frac{1}{2}$	1	$\frac{1}{6}$	$\frac{1}{4}$

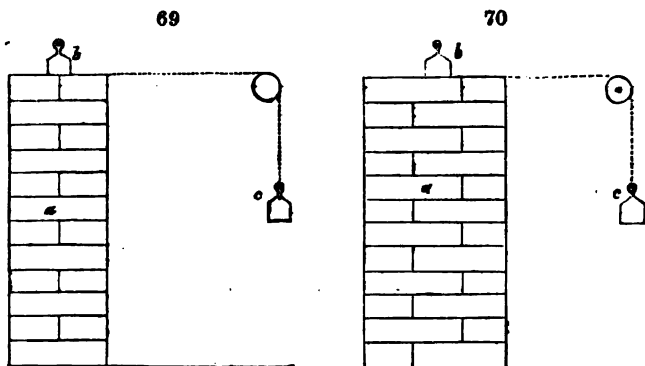


The pier *a*, fig. 67, is 2 in. in thickness, 12 in. high, and it was increased in length from 6 in. to 12. The lateral force was applied at right angles to the length; and the following are the results : —

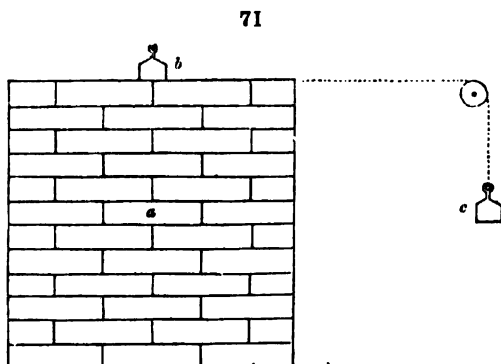
Height of the pier.	Dimensions of the pier.	Weight of the pier.	Weight on the top of the pier.	Balancing lateral force.	The proportions of the lateral force to the weight of the pier, &c.
12 in.	2 in. by 6 in.	$2\frac{1}{4}$ lb.	1 lb.	$\frac{1}{8}$ lb.	$\frac{1}{16}$ part.
12	2 ... 8	3	1	$\frac{1}{8}$	$\frac{1}{12}$
12	2 ... 10	$3\frac{1}{2}$	1	$\frac{1}{8}$	$\frac{1}{38}$
12	2 ... 12	$3\frac{1}{2}$	1	$\frac{1}{6}$	$\frac{1}{19}$

The pier *a*, *fig. 68.*, is 2 in. in thickness ; the length increases from 4 in. to 8 in., the height continuing the same as in the last figure ; but the lateral force is applied in the direction of the length, and the results are as follow : —

Height of the pier.	Dimensions of the pier.	Weight of the pier.	Weight on the top of the pier.	Balancing lateral force.	The proportion of the lateral force to the weight of the pier, &c.
12 in.	4 in. by 2 in.	$1\frac{1}{2}$ lb.	1 lb.	$\frac{1}{6}$ lb.	$\frac{1}{8}$ part.
12	6 ... 2	$2\frac{1}{4}$	1	$\frac{1}{6}$	$\frac{1}{6}$ nearly.
12	8 ... 2	3	1	$1\frac{1}{6}$	$\frac{1}{4}$



The piers, *figs. 69, 70, and 71.*, are of equal height, and contain the same quantity of materials ; because the respective dimensions of each, when multiplied into each other, give the



same result. The lateral force, however, is applied differently to each ; the base of the pier *a*, *fig. 69.*, being 4 in. to oppose the force ; that of *a*, *fig. 70.*, being 6 in. ; and that of *a*, *fig. 71.*, being 12 in. The results are as follows : —

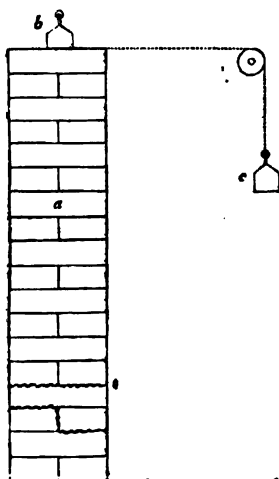
Height of the different piers.	Dimensions of the piers.	Weight of the piers.	Weight on the top of the piers.	Balancing lateral force.	The proportions of the lateral force to the weight of the pier, &c.
<i>fig. 68.</i> 12 in.	4 in. by 6 in.	$4\frac{1}{2}$ lb.	4 lb.	$1\frac{1}{2}$ lb.	$\frac{1}{4}$
<i>fig. 69.</i> 12	6 ... 4	$4\frac{1}{2}$	4	$1\frac{1}{2}$	$\frac{1}{6}$
<i>fig. 70.</i> 12	12 ... 2	$4\frac{1}{2}$	4	3	$\frac{1}{3}$

Piers with square bases, of the same height as the last three figures, but of different dimensions, have the following results: —

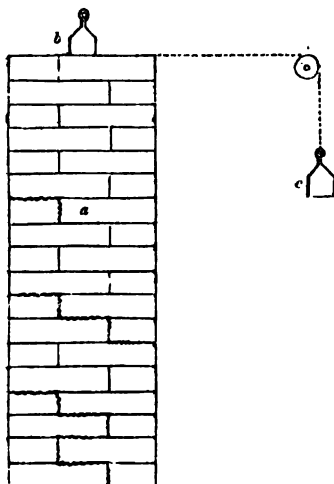
Height of the piers.	Dimensions of the piers.	Weight of the piers.	Weight on the top of the piers.	Balancing lateral force.	The proportion of the lateral force to the weight of the piers, &c.
12 in.	4 in. by 4 in.	3 lb.	4 lb.	$\frac{7}{8}$ lb.	$\frac{1}{8}$ part.
12	6 ... 6	$6\frac{3}{4}$	4	$1\frac{1}{2}$	$\frac{1}{6}$
12	6 ... 6	$6\frac{3}{4}$	8	$2\frac{3}{4}$	$\frac{1}{6}$
12	8 ... 8	12	8	$4\frac{1}{8}$	$\frac{1}{5}$

The piers *a a*, *figs. 72. and 73.*, are both 18 in. in height, with bases of 4 in. by 4 in., and 6 in. by 4 in., respectively.

72



73



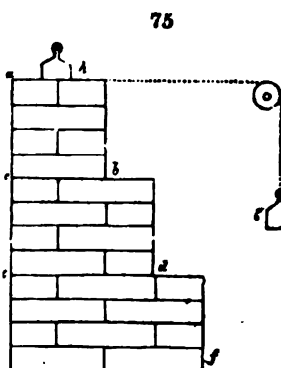
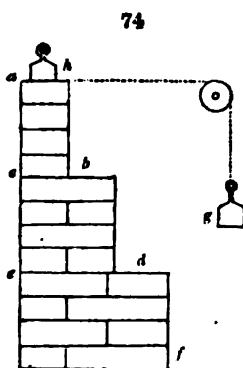
They are introduced to show where the lateral force breaks, or causes the piers to open, under different weights placed on their top. The following are the results of the experiments: — First, on *fig. 72.*

Height of the pier.	Dimensions of the pier.	Weight of the pier.	Weight on the top of the pier.	Overturning lateral force.	Number of courses above the base where the pier opens before falling.
18 in.	4 in. by 4 in.	$4\frac{1}{2}$ lb.	$\frac{1}{2}$ lb.	$\frac{1}{2}$ lb.	3 courses above the base.
18	4 ... 4	$4\frac{1}{2}$	1	$\frac{5}{16}$	$2\frac{1}{2}$
18	4 ... 4	$4\frac{1}{2}$	2	$\frac{4}{16}$	$2\frac{1}{2}$
18	4 ... 4	$4\frac{1}{2}$	4	$\frac{7}{16}$	$2\frac{1}{2}$
18	4 ... 4	$4\frac{1}{2}$	8	$\frac{8}{16}$	$2\frac{1}{2}$

Result of Experiments with *fig. 73.*

Height of the pier.	Dimensions of the pier.	Weight of the pier.	Weight on the top of the pier.	Overturning lateral force.	Number of courses above the base where the pier opens before falling.
18 in.	6 in. by 4 in.	$6\frac{1}{2}$ lb.	$\frac{1}{2}$ lb.	$\frac{11}{16}$ lb.	12th & 8th courses.
18	6 ... 4	$6\frac{1}{2}$	1	$\frac{11}{16}$	12th on $2\frac{1}{2}$ courses.
18	6 ... 4	$6\frac{1}{2}$	2	$\frac{11}{16}$	12th ... $2\frac{1}{2}$
18	6 ... 4	$6\frac{1}{2}$	4	$1\frac{1}{8}$	4 courses, and diagonally to base.
18	6 ... 4	$6\frac{1}{2}$	8	$1\frac{1}{8}$	4 ditto, ditto.

Secondly, of Buttresses. — The bricks are the same as in the seven preceding figures, and the diagrams are on the same scale.



Let *figs. 74. and 75.* be two buttresses, and the following are their dimensions, and the results of the lateral force acting upon them.

It will be observed, that the results of the experiments on both *figs., 74. and 75.,* are the same.

Relative to *fig. 74.*

Piers composing buttresses.	Height of piers.	Dimensions of the piers.	Total height of the buttresses.	Weight of the piers.	Total weight of the buttresses.	Weight on the top of the buttresses.	Results and observations.
<i>a b</i>	4 in.	2 in. by 4 in.	12 in.	$\frac{1}{2}$ lb.	3 lb.	2 lb.	Lateral force causes the buttresses to give way on <i>c b</i> .
<i>c d</i>	4	4 ... 4	12	1	3	4	Ditto on the base <i>c b</i> .
<i>e f</i>	4	6 ... 4	12	$1\frac{1}{2}$	3	8	Ditto on the base <i>c b</i> .

Relative to *fig. 75.*

Piers composing buttresses.	Height of piers.	Dimensions of the piers.	Total height of the buttresses.	Weight of the piers.	Total weight of the buttresses.	Weight on the top of the buttresses.	Results and observations.
<i>a b</i>	4 in.	4 in. by 4 in.	12 in.	1 lb.	$4\frac{1}{2}$ lb.	2 lb.	Lateral force causes the buttress to give way on <i>c b</i> .
<i>c d</i>	4	6 ... 4	12	$1\frac{1}{2}$	$4\frac{1}{2}$	4	Ditto on the base <i>c b</i> .
<i>e f</i>	4	8 ... 4	12	2	$4\frac{1}{2}$	8	Ditto on the base <i>c b</i> .

The buttresses (*figs. 74. and 75.*), by their yielding to the lateral force at their respective bases (*c b* and *c b*), proved the lower structures of each to be of unnecessary stoutness, in proportion to the upper parts, *a b* and *a b*. A buttress erected for the purpose of supporting and resisting a lateral force at *a*, should give way only at the base line *ff*. (See the piers, *figs. 72. and 73.*)

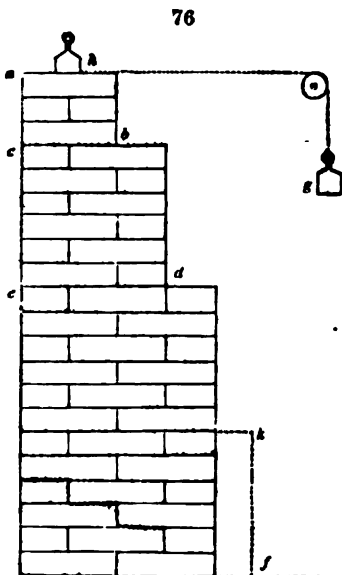
With the view of determining the true proportions of such a buttress, a pier was constructed, having it base 8 in. by 4 in., and raised to the height of 12 in., or twelve courses. This pier was submitted to the test of the lateral force, and yielded under the weight of $2\frac{1}{2}$ lb.: a 4 lb. weight, was previously placed on the top, and in the centre of the pier; a 1 lb. and a 2 lb. weight having been found too light to prevent the top courses from slip-

ping off under the lateral force. The pier gave way at the base, and diagonally towards it.

Another pier was next constructed, measuring 6 in. by 4 in. at the base, and raised indefinitely to the height of eight or ten courses, or inches, and a 4 lb. weight placed on the top. This pier being also submitted to the lateral force, as in the previous experiment, required the courses to be taken down to the sixth from the base before it would just balance, as the first had done, under the $2\frac{1}{2}$ lb. lateral force.

A third pier was then built up, having a base 4 in. by 4 in.; and, when raised three courses in height, with the 4 lb. weight on the top, it also just balanced against the lateral force of $2\frac{1}{2}$ lb., the same as the two former piers.

These three piers were placed one upon the other, as represented in the diagram *fig. 76.*, by *e f*, *c d*, and *a b*, with the 4 lb. weight on the top. When this compound pier, or buttress, was submitted to the test of the lateral force applied at *a*, the whole, or the buttress, balanced against $2\frac{1}{8}$ lb., giving way diagonally on the base line *f g*, as was required of a true proportioned buttress.



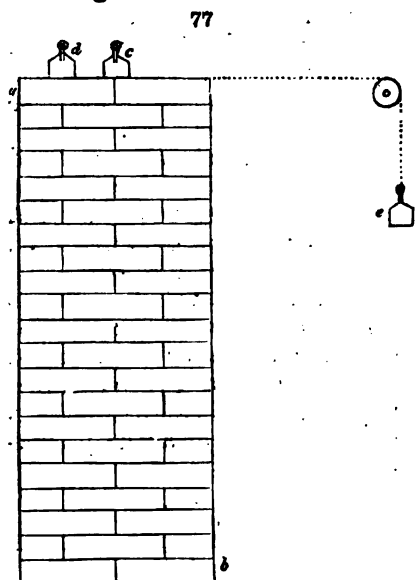
Particulars relative to the Buttress *fig. 76.*

Piers composing the buttress.	Dimensions of the piers.	Height of the piers.	Total height of the buttress.	Weight of the piers.	Total weight of the buttress.	Weight on the top of the buttress.	Results and observations.
<i>a b</i>	4 in. by 4 in.	3 in.	21 in.	$\frac{4}{8}$ lb.	9 lb.	4 lb.	The lateral force caused the buttress to give way on the base line <i>f g</i> , breaking diagonally from the fourth course to the base.
<i>c d</i>	6 ... 4	6	21	$2\frac{1}{2}$	9	4	
<i>e f</i>	8 ... 4	12	21	6	9	4	

The total weight of the buttress *fig. 76.*, including the weight on the top, equalled 13 lb.; and the lateral overturning force equalled $2\frac{1}{8}$ lb., or one sixth the weight of the buttress and the weight placed on the top of it. The increased height, or length of lever, formed by one pier being placed upon another, and these two upon a third, was considerably counteracted

by their respective weights acting towards the same outside, instead of being in the middle: but more of this presently.

On the top of the buttress *fig. 76.* a 2 lb. weight was substituted for the 4 lb. weight; and then the whole was submitted to the lateral force of $2\frac{1}{2}$ lb. The result was, that the buttress gave way on the top of the pier *ef*; thus proving the 2 lb. weight too light. Under the 4 lb. weight the buttress first gave way on the base *gf*, and next on the base *ed*, in consequence of the inclination which caused the centre of gravity of the piers above to act, or fall without the base *ed*. A 7 lb. weight being put on the top, in the place of the 4 lb. weight, did not alter the breaking of the buttress towards the bottom, which was much



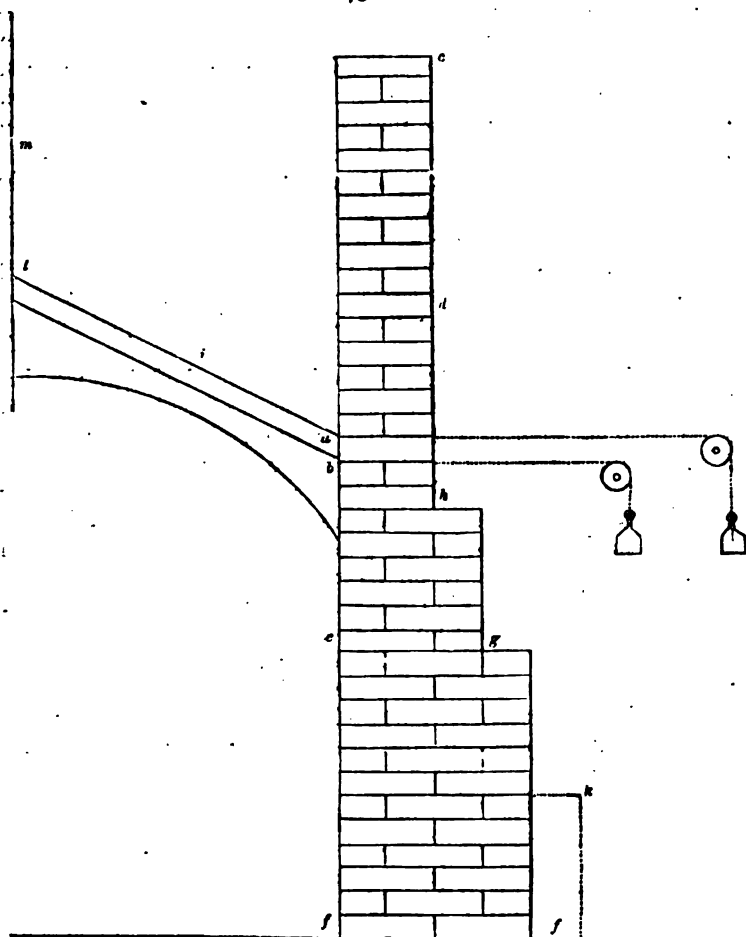
the same as under the 4 lb. weight, perhaps half a course lower; thus proving that a greater weight acts more favourably than otherwise, though a greater weight than 4 lb. was not actually necessary in this instance. The proportions of the dimensions of this buttress require notice: since the height decreases in geometrical progression, and the several dimensions in arithmetical progression.

The diagram *fig. 77.* is to show the difference of the effects of the same weight being placed on the top, in the middle, or towards the farther side from the lateral force. This pier is of the same height as the buttress *fig. 76.*, and of equal dimensions at the base. The following are the results:—

Pier.	Dimensions of the pier.	Height of the pier.	Weight of the pier.	Weight on the top of the pier.	Balancing lateral force.	Conditions.
<i>a b</i>	8 in. by 4 in.	21 in.	$10\frac{1}{2}$ lb.	4 lb.	$1\frac{1}{2}$ lb.	With the weight in the middle at <i>c</i> .
<i>a b</i>	8 ... 4	21	$10\frac{1}{2}$	4	$2\frac{1}{16}$	Ditto at the outside at <i>d</i> .

The buttress *fig. 76.* and the pier *fig. 77.* agree precisely,

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as it regards requiring the same lateral force, when the weight on the pier is placed at *d*; thus proving that a buttress of the construction of *fig. 76.* is as strong as this pier *fig. 77.*, which is composed of less material by $1\frac{1}{2}$ lb. in weight, or in the proportion of nearly one tenth part.

To return to the buttress *fig. 76.*: since this buttress appears to answer the purpose intended, it will not be amiss to delineate its parts more fully, by introducing another diagram, in which bricks will be substituted for the 4 lb. weight on the top, and thus complete the buttress. A few observations will necessarily follow:—

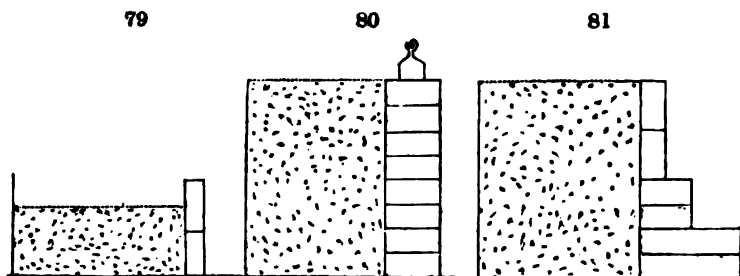
Fig. 78. represents the buttress *fig. 76.* completed; in which

a is the point of resistance, as in *fig. 76.*; ac is the balancing height on ff , and is equal in weight to 4 lb. When b is made the point of resistance to a lateral force, then bd is the balancing height on eg only; and $ah : ac :: 1 : 6$, $bh : bd :: 1 : 3$. The proper situation for the spring of a flying buttress (il against the wall m) is at the points a and b , being the parts of the buttress which offer the greatest resistance to a lateral force.

Experiments to ascertain the Laws relative to the Pressure of the perpendicular loose Soil of any Bank, against Walls of Masonry of different Dimensions. — The materials made use of in this instance were peas, which were placed in a cubical box measuring 8 in., and leaving one side movable for the wall. The weight of the peas equalled 15 lb.; therefore one eighth equals nearly 2 lb.

Experiment First. (fig. 79.)—A wall composed of eight wooden bricks was erected, the dimensions of each of which were 2 in. wide by 4 in. long, and 1 in. thick; the eight bricks weighed 1 lb. On constructing this wall, it gave way when it was raised four courses, or 4 in. in height; the peas within the box being 3 in. high. When the wall was raised up 2 in. higher, having the peas in the box also raised $\frac{3}{4}$ in. higher, the wall required a 2 lb. weight to be placed on its top, which just balanced the pressure of the peas. On completing the wall to 8 in. in height, and the peas being filled up level with the rim of the box, the wall just balanced with 6 lb. on the top; a positive proof of the wall itself being insufficient to sustain the internal pressure.

Experiment Second. (fig. 80.) — In this case the wall was made 2 in. thick, and composed of sixteen bricks; the wall being 8 in.

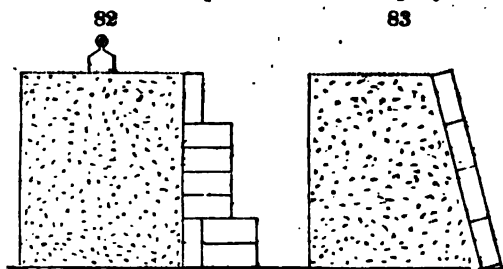


high, and its weight equalling 2 lb. The peas within were level with the top of the box; and their weight, as before stated, equalled 15 lb. This height and weight of peas caused the above wall to give way; but, on putting a 1 lb. weight on the top, it just balanced against the pressure of the peas.

From these two experiments it appears, that, by doubling the thickness of a wall, less than half the weight is sufficient to maintain the outward pressure of the bank within.

Experiment Third. (fig. 81.) — This wall consisted of sixteen bricks, and just balanced against the pressure of the full box of peas.

Experiment Fourth. (fig. 82.) — This wall consisted of sixteen bricks, and was as strong as the wall *fig. 81.* with 1 lb. on the top. Again, the wall *fig. 82.* carried a 4 lb. weight, placed in the centre on the surface of the peas. When this last wall was reversed, or placed with its projections inside among the

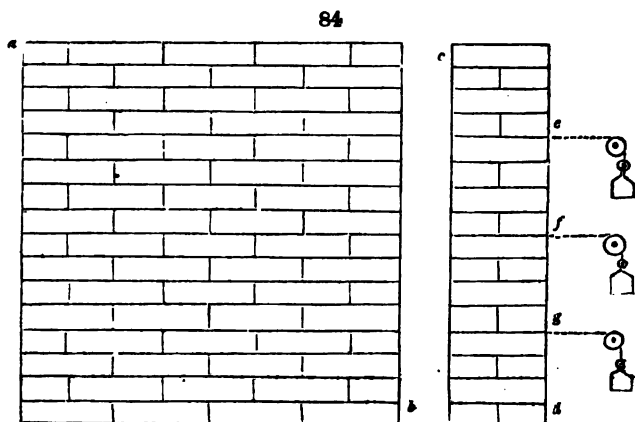


peas, it only just balanced with the pressure of the peas against it; thus proving the greater strength to be when the set-offs are placed on the outside, or in the buttress manner.

Experiment Fifth. (fig. 83.) — When a wall 1 in. thick, and composed of eight bricks, was inclined 15° from the perpendicular towards the peas, it just balanced against their weight.

Experiment Sixth. — When the same wall was inclined 25° , it balanced with 2 lb. placed on the peas in the centre. The angle at which the peas stood naturally inclined was 36° .

On the Strength of Walls against lateral Force. — The following diagrams are upon the same scale as the preceding figures, and constructed of wooden bricks. The letters *a b*, in *figs. 84.* and



85. respectively, represent the front elevation; and *c d*, in both figures, the side view, or section, of the walls. The following are the results relating to *fig. 84.* : —

Wall.	Dimensions.	Height.	Weight.	Points where the lateral force was applied.	Lateral force.
<i>a b</i>	16 in. by 4 in.	16 in.	16 lb.	At <i>e</i> .	$1\frac{1}{8}$ lb.
<i>a b</i>	16 ... 4	16	16	<i>f</i>	$2\frac{7}{8}$
<i>a b</i>	16 ... 4	16	16	<i>g</i>	6

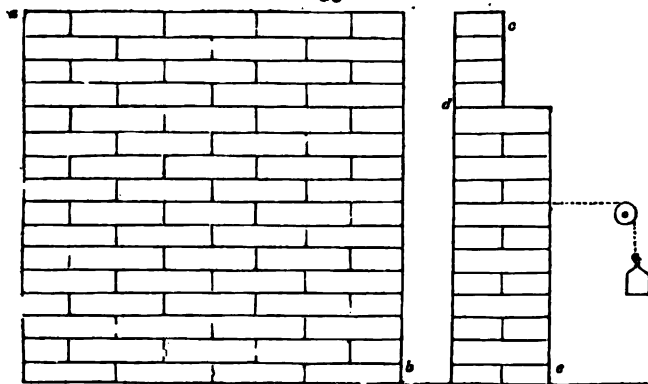
Under the first experiment, at the point *e*, the wall gave way, diagonally, from the eighth to the fourth course from the bottom, opening at both places opposite to the force. Under the second and third experiments, at the points *f* and *g*, the wall gave way on the bottom course.

The following are the particulars relating to *fig. 85*. : —

Wall.	Dimensions.	Height.	Weight.	Lateral force applied.	Lateral force.
<i>e d</i>	16 in. by 4 in.	12 in.	12 lb.	At <i>f</i> , or 8	$2\frac{7}{8}$ lb.
<i>d c</i>	16 ... 2	4	2	courses up.	$2\frac{7}{8}$

It appears from the above table, on comparing the lateral force with that in the table relating to *fig. 84*., that, when the force is applied at the same height from the base, the resistance is equal in both instances, although the four top courses in *fig. 85*. have been reduced to half the weight of the same number in *fig. 84*. This has been before shown to be the case on lightening

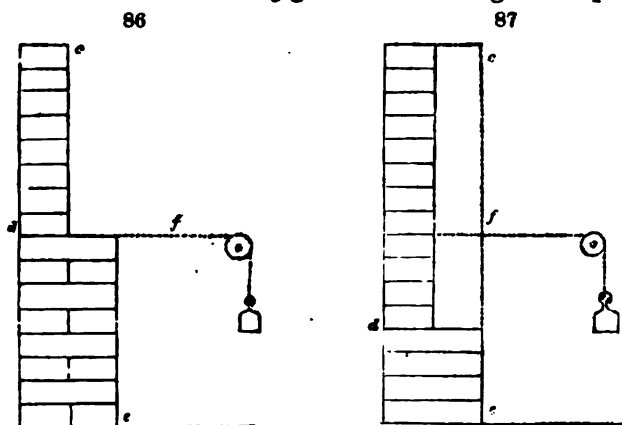
85



the weight on the top of structures of this kind, as explained by the table relating to *fig. 66*.

On farther reducing this wall in thickness four courses lower, or, altogether, eight courses, and applying the lateral force at the eighth course, as shown by the diagram *fig. 86*., the lateral force required to overturn this wall was $2\frac{7}{8}$ lb. ; but, when the wall was still farther reduced in thickness to within four courses

of the base, as shown by *fig. 87.*, the lateral force required to overturn it was only 1 lb. In the former of these two experiments (*figs. 86. and 87.*), the wall gave way on the bottom course: and, in the latter, the wall broke on the base *d*, the force being applied at *f*. On constructing the same wall, as represented in the end view of *fig. 87.*, but adding to it a pilaster



of 2 in. in width, placed on the base *d*, as shown by the dotted line in that diagram, the result was, that, when applying the lateral force at *f*, it required $2\frac{1}{2}$ lb. to balance it.

By increasing the pilaster to 4 in. in width, as shown by *g h*,

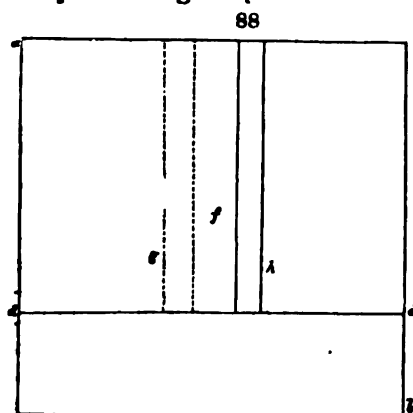


fig. 88., and applying the force *f*, as before, $2\frac{1}{2}$ lb. were necessary to balance the wall.

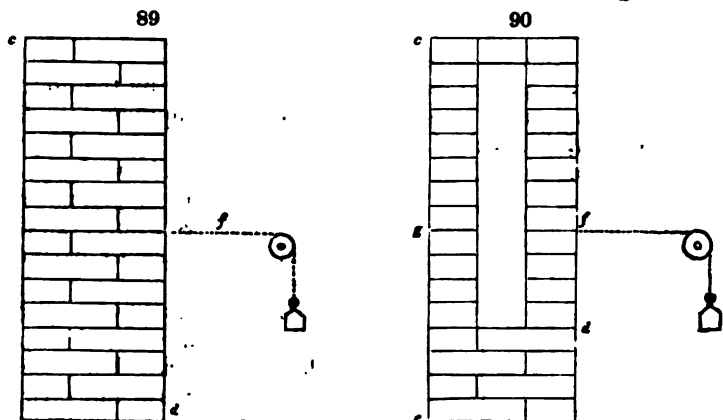
From these two experiments it appears, that pilasters, or flat buttresses, are of service in giving strength to a thin wall; but the plan will only answer where the force, as of the wind, can act on one side. The cause of the increased strength given to a wall by a pilaster is owing, in a great measure, to the centre of

gravity of such wall being the farthest within the base, and having the base of the pilaster of the same depth (as in *fig. 84.*); but, it must be observed, that the lateral force is applied directly through the pilaster, and the force, as of the wind, would act on the whole length of the wall; therefore, in order to obtain the true value of the pilasters, the average lateral force must be

taken between walls without pilasters, and walls with them; which, in the above case, is $1\frac{1}{2}$ lb., being the average between 1 lb. and $2\frac{1}{2}$ lb.

The quantity of material composing the wall *fig. 88.* is about a quarter less than that of *fig. 84.*; and the difference in strength of the former to the latter is not quite half; the lateral resistance of *fig. 84.* being $2\frac{1}{2}$ lb., and that of *fig. 88.* being $1\frac{1}{2}$ lb.; which make a difference of $1\frac{1}{2}$ lb. in favour of *fig. 84.* Now, in *fig. 85.* the material saved is one eighth of that in *fig. 84.*, with very little loss of strength.

A hollow wall was next erected, being constructed on the same scale, as to length and height, as the five preceding figures, but of two additional inches in thickness, or 6 in. instead of 4 in. This wall was tried against another wall of precisely equal dimensions, but solid throughout: the diagrams *figs. 89.* and *90.* are end views of these two walls. The results of the experiments were, that the solid wall (*fig. 89.*) required a lateral force of $5\frac{1}{2}$ lb. to balance it; and the hollow wall (*fig. 90.*) required a force of 4 lb. to balance it. Now, the weight of the

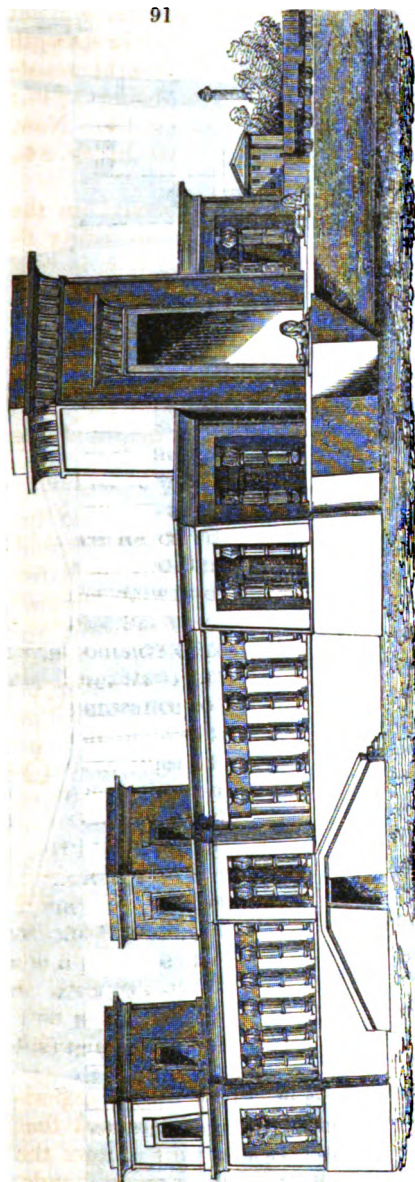


wall *fig. 89.* was $24\frac{1}{2}$ lb.; and that of *fig. 90.* was 18 lb., or one quarter less of material than the other; and the difference between the lateral force, or between $5\frac{1}{2}$ lb. and 4 lb., is $1\frac{1}{2}$ lb., which is rather more than a quarter. This shows that what is saved in material is lost in strength; but, at the same time, proves a hollow wall to be stronger than a pilastered wall, although containing the same quantity of materials.

Let it be here remarked, that, whilst carrying on the experiment with the hollow wall, the lateral force at *f* caused that part of the wall *g* to yield a little inwards; which shows the necessity of preventing this by occasionally introducing bonds. Both of these walls (*figs. 89.* and *90.*) gave way towards the bottom courses.

ART. V. *A Design for a Termination to a Railway.* By Mr. W. J. SHORT.

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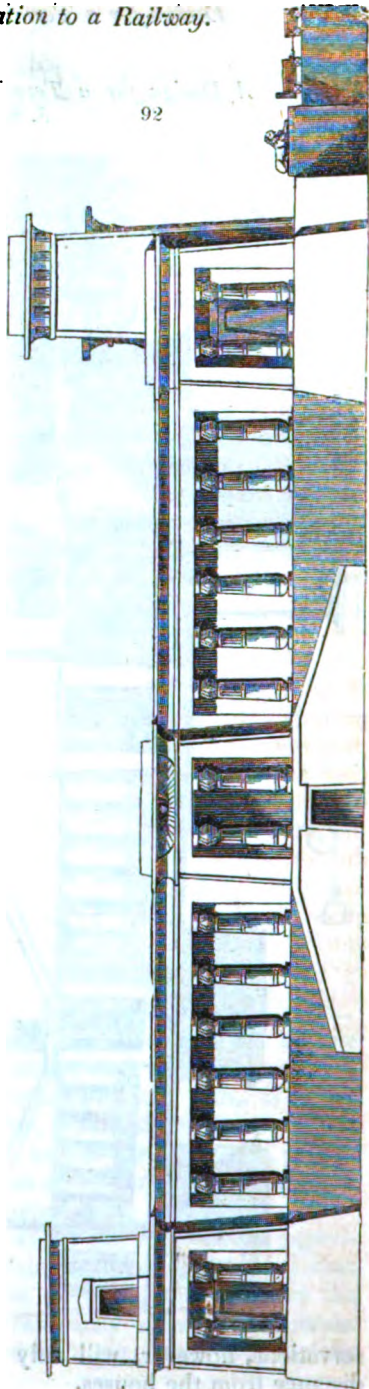


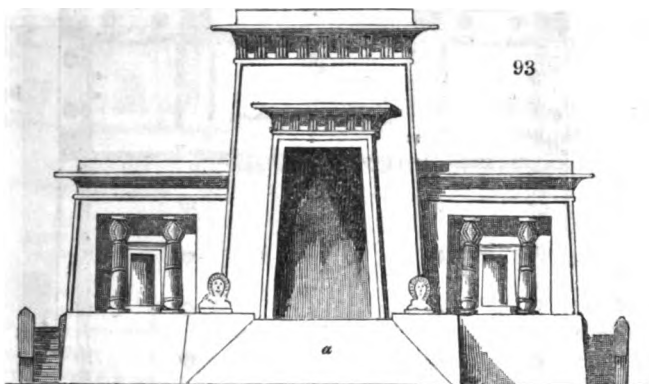
UNDERSTANDING that two or three lines of railroads have been advertised by different engineers from Brighton to London, and presuming that one of them, at least, would have a termination at Kennington Common, it occurred to me, on examining the spot, that, with a little attention, the termination might be made a pleasing object when viewed from the high turnpike road, and from the residences in the immediate neighbourhood. If the inhabitants were certain that it would be so (for many now picture to themselves high bare walls, similar to gas-works), a great deal of the opposition, which I am sure the promoters of these schemes will otherwise meet with, would vanish; as large public buildings, possessing architectural beauty, will always improve any neighbourhood, by introducing a taste for embellishment and alteration in the appearance of the surrounding houses, to meet and reduce as much as possible the contrast; and, when new buildings appear under such circumstances, they are generally of a much superior character to those which were previously in existence. These ob-

servations, however, will only apply when the railroad is some distance from the houses.

On the above considerations, I have taken this opportunity of putting forward the following sketch, without expecting that the plan will be found exactly to suit any of the projected roads, as no two railways would require the same quantity or description of buildings at their terminations; and fearing, as I have had no particular data to work upon, that it may be found defective in many respects. My intention is merely to show, in a rough manner, that, in all works of this kind, a certain degree of elegance, and even grandeur, may be obtained by a judicious employment of architecture, without injury to the purposes of the railway, and with no very great additional expense or trouble. In such important works, I hope it will be acknowledged by engineers, that, at the terminations in or near great towns, it would be desirable that the necessary buildings surrounding them should be well studied as to their appearance and general effect, so that, when completed, they might form an imposing whole.

I have chosen the Egyptian style, which is probably the most suitable for engineering purposes: being massive; having few and bold details; and, consequently, not requiring very nice or expensive workmanship or materials. Another advantage is, that not much knowledge of architecture is required to superintend the erection of works in this style, after drawings have been sup-

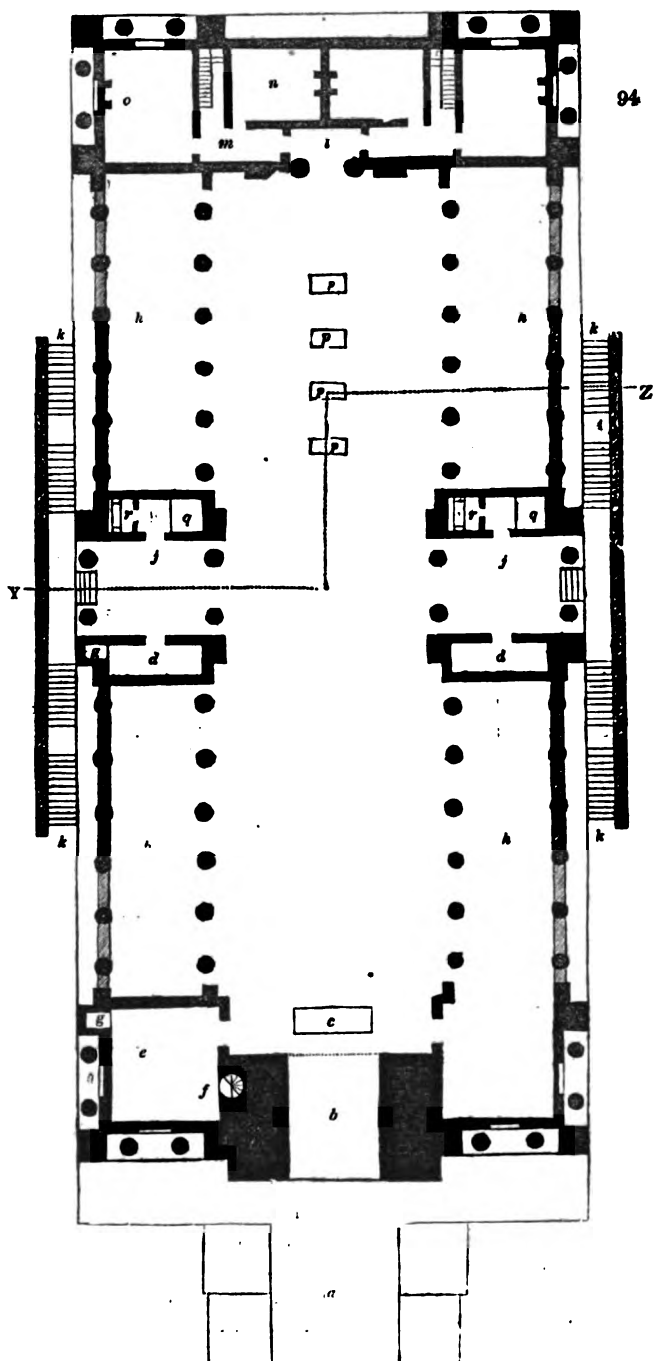


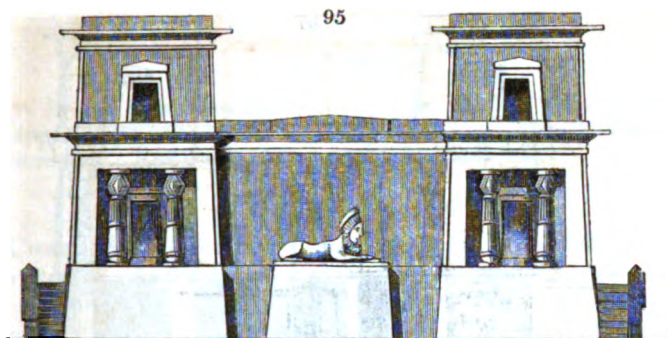


plied by an architect, or some other competent person. It will also be an easy matter to make the whole of the erections fire-proof, thus saving a large sum annually, which otherwise would be expended for the insurance of the buildings, and of the goods contained in the warehouses.

Description of the Buildings.—Fig. 94. is the plan of the termination and depôt; in which *a* is part of the embankment and railway; *b*, the entrance for carriages; *c*, a weighing machine for the purpose of ascertaining the quantity of goods imported; *d d*, offices for transacting business connected with the passengers; *e*, the office for the luggage department; *f*, staircase to the strong room for cash and account books, which is over the entrance *b*; *g g*, closets for wash-hand basins, &c., for the use of the clerks; *h h h h*, warehouses, open in front, for the temporary stowage of goods, and the carriages when not in use; *i*, large open court; *j j*, entrances for the egress and ingress of passengers, which entrances are approached from the outside of the buildings, by the double flight of steps marked *k*; *l*, a small porch, or court, from which are entrances, on the right and left, into the two residences for the use of the officers connected with the establishment; *m*, hall and staircase; *n*, a parlour, or library, lighted from above by a lanthorn; and *o*, a dining-room. Above this story are two principal and two servants' bed-rooms; and below, in the basement, all the domestic offices.

Under the whole of the before-described buildings (except the two residences) are spacious warehouses for the stowage of goods, with entrances beneath the flight of steps on each side, large enough to admit of carts and waggons, so that the business connected with this department may be carried on without at all interfering with the passengers; the goods being lowered down from the railway through the apertures (marked on the plan, *p*,) from the upper warehouses into the carts below to be





carried away at once. All this would be done without being seen from the houses in the neighbourhood, and, therefore, would not be an eyesore, nor any annoyance, to the occupants.

Here, also, might be the workshops for the occasional repair of the carriages, &c.; and places for keeping stores and materials for the repair of the railway, in the vicinity of its termination. In this case, it appears to me, that the best method to light the basement will be with gas; but windows in the sides, with the assistance of the openings (marked *p*) would, perhaps, be sufficient light for this story, if it should be thought preferable. *q q* are staircases from above; *rr* are water-closets.

Fig. 93. is the elevation next the railway, showing the entrance for carriages in the centre, with the strong room above, and the two offices forming the wings. *a* is a transverse section of the railway embankment.

Fig. 95. is the elevation of the two residences as seen from the outside of the buildings.

Fig. 92. is a side elevation. On the basement, in the centre, is the entrance to the warehouses for carts, &c.; in the right wing is one of the offices, and in the left wing, one of the residences; the intermediate space between the two being filled up with the passengers' entrance, the flight of steps, and the warehouses. *a* is the embankment and railway, with a carriage coming up.

I have shown the columns all of one pattern or design, although I do not see any objection to a little difference being made in the details, in order to give variety on near inspection; but care must be taken not to alter their general outline, so as to produce too strong a contrast when viewed from a moderate distance.

96 As effect in the interior court (*i*, *fig. 94.*) is not, in this case, of very great consequence, instead of the columns shown, square ones, like those in *fig. 96.*, might be introduced without much impropriety; the form being simple, and expressive of strength, consequently in character with the style of the whole, and also less expensive. Nearly similar supports are to be found in the Temple of Keylas.

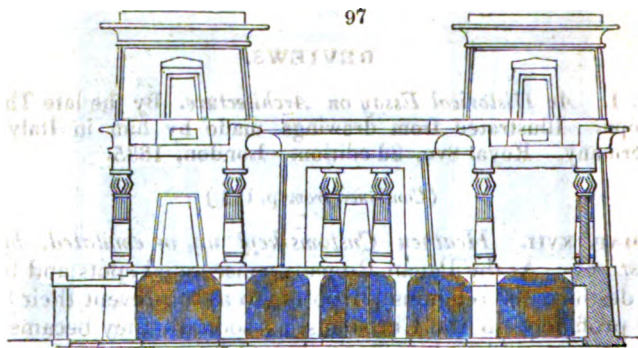


Fig. 97. is a section on the line *Y Z*, in *fig. 94*. On the left is one of the passengers' entrances, and on the right one of the open warehouses; at the end of the large open court is seen the porch, under which are the doorways to the residences on each side of the same; below are the arched warehouses with the entrance to them.

Fig. 91. Perspective view of the termination.

It will be well here to notice, that I have not provided any particular place for the departure of cattle, thinking that not many would be likely to come by a railway from Brighton; but, should it be thought necessary, it may be readily managed by leaving out the two parlours (*n*, *fig. 94*.), and making there an entrance to an easy inclined plane down to the common below. Above such entrance there could be erected two sitting-rooms to the residences, in lieu of those now shown; but a little alteration in the position of the doorways to the houses would, in that case, be required; or one of the passengers' entrances would do for the exit of live stock, having an inclined plane, instead of a flight of steps; although I think the best plan of all would be to land them on an inclined plane, by the side of the railway embankment, at some little distance from the front of the carriage entrance.

If it should be determined to make any architectural display at the terminations, or at other places, such as at viaducts, &c., on any railway, it would be an excellent plan to have one or two large well-executed drawings made of such objects, and have them exhibited in the neighbourhood where it may be intended to erect them; as, no doubt, many persons would, in such a case, view the matter more favourably than if they were kept quite in the dark; and, probably, some patrons might be found amongst them. The pictures would also be useful to exhibit before the committees of the Houses of Parliament, when applying for an act to authorise the construction of the works.

London, November, 1835.

REVIEWS.

ART. I. *An Historical Essay on Architecture.* By the late Thomas Hope. Illustrated from drawings made by him in Italy and Germany. Royal 8vo, 2d edition. London, 1835.

(Continued from p. 173.)

CHAP. XVII. *Heathen Customs kept up, or emulated, by the Christians.* As the Pagan Romans consecrated spots and buildings destined for religious purposes, so as to prevent their being used profanely, so the Christians, as soon as they became sufficiently powerful, adopted similar consecrations. Hence the origin of sprinkling with holy water, in imitation of the lustral water of the Pagans who preceded them.

"In idolatrous Rome, the priestesses of certain deities were obliged to make a vow of perpetual virginity; which custom, as soon as the Christians became sufficiently numerous to spare certain members from their further increase, they imitated in their religious orders, male and female. In truth, the very tunic of the priest, the lituus of the augur, and cap of the flamen of Pagan Rome, were preserved in the Dalmatic, the mitre, the staff, and the crozier of Christian bishops.

"More important similarities still crept in: for while the first Christians, chiefly composed of Jews and Gentiles, had, even in their state of comparative darkness, already discarded division or plurality in the Godhead, had already confined their worship to one single immaterial essence, we may say that the later Christians re-introduced, even in their purer religion, the shadow of polytheism, and the worship of many gods. Saints, nay, saintesses, were supposed, in their glorified state, to possess influence over men, and ability to intercede for them with the Deity, and a power of performing miracles; and soon obtained, not only reverence, but addresses, invocations, prayer, and worship.

"Indeed, the resemblance between Christians and polytheists even, in some respects, became more pointed. It is singular that the latter, of every denomination, seem alike to have distinguished and honoured some goddess for the preservation of her virginity. The Indians made it the peculiar attribute of one of their deities; the Asiatic Greeks, of Diana; the European Greeks, of Minerva; the Christians, who found it in the Mother of God, bestowed upon her a sort of apotheosis, for which the Scripture affords no foundation. Nay, they afterwards maintained that Mary's own conception offered the same miracles with that of her Son; and, in view of that circumstance, transferred to her, in their representations, the crescent, which had belonged to the Diana of the Greeks and the Isis of Egypt." (p. 187—189.)

From this chapter, and others in the work, it appears that religion, like every thing else human, commences in a state of rudeness, and barbarous simplicity and grossness; it afterwards becomes more complex, even to confusion, as in the case of polytheism; it next becomes comparatively simple, as in the case of Christianity; and the nature of its further progress may be anticipated from the past; the ultimate *beau idéal* seems to be purity and simplicity.

CHAP. XVIII. *Schism between the Greek and Latin Churches,*
VOL. III. — No. 27.

and its Effect upon the latter ; the Multiplication of sculptured Representations. The first Christians being chiefly converted Jews, and observers of the laws of Moses, abhorred images ; but afterwards, when Christianity spread among the idolaters, who were accustomed to have their devotion excited by visible objects, the saints, including our Saviour, the Virgin, and other personages, were sculptured or painted. This led ultimately to the separation of the Christians into two sects, the Greek church, which did not admit of images, and the Latin church, which required them.

(To be continued.)

ART. II. *The Laws of harmonious Colouring, adapted to interior Decorations, Manufactures, and other useful Purposes.* By D. R. Hay, House Painter, Edinburgh. 8vo, 3d edition, pp. 72, 5 coloured plates and several Diagrams. Edinburgh, 1836.

ONE of the characteristics of the present age is, the union of science and practice in our tradesmen and manufacturers. It is impossible to peruse the work before us, without being convinced that its author is thoroughly acquainted with the science of his art, and without being struck with his unassuming and modest manner of expressing himself. Independently of the subject on which the volume treats, there is much sound sense in it on the subject of art and artists generally ; and, though it is impossible to do full justice to Mr. Hay's ideas without the aid of his coloured plates ; we shall give a short outline of his system, and quote some of his remarks on artists, and on the application of art to manufactures.

In the two former editions of this work, the author tells us, that he "merely endeavoured to adapt the laws of harmonious colouring to interior decoration. In this edition, however, I have given such a general view of those laws as, I trust, may be useful in all cases where various colours are necessarily brought together ; whether in decoration, manufacture, dress, planting of flowers, or in other ordinary matters. Independently of such applications, however, I do not hesitate to say, that a knowledge of these laws will enhance the pleasure derived from viewing the beauties, not only of pictorial art, but of Nature herself, in so far as that knowledge is calculated to cultivate and improve the perception.

"The error of considering the arrangement of colours as a matter of taste merely is very prevalent. Mere matters of taste, however, are subjects upon which both nations and individuals differ widely ; and there are no productions of this kind, however extravagant or absurd, that have not their admirers while they bear the gloss of novelty or stamp of fashion. Such matters are subject to no rule whatsoever ; they are governed entirely by caprice ; but it is very different with the arranging of colours, for that is regulated by laws founded on natural principles. There are, no doubt, many varieties of tastes in regard to colours, both individually and arranged. Many have fancies for, and antipathies to, particular hues. All have their tastes in regard to particular styles of colouring ; some being fond of gay and lively ;

some, the rich and powerful ; and others, the deep and grave. Some have a partiality for complex arrangements, while others prefer extreme simplicity. But this is the case in music also : every variety and style of composition has its particular admirers ; yet it never is assumed from this, that the arranging of the notes in a melody, or other musical composition, is a mere matter of taste. All know that the arrangements of notes, in such cases, is regulated by fixed laws, which cannot be deviated from without giving offence to the ear ; and that a knowledge of these laws is absolutely requisite to every one who wishes to cultivate that pleasing art. It does not matter under what circumstances a variety of colours is presented to the eye ; if they be harmoniously arranged, the effect will be agreeable to that organ, as harmonious music to the ear ; but, if not so arranged, the effect on the eye must be unpleasant ; and the more cultivated the mind of the individual, the more annoying will such discordance be. These facts I have endeavoured to make apparent, by drawing an analogy between the science of colour and that of sound." (*Introd.*, vii.)

That the ancients understood the laws of harmonious colouring, or, perhaps rather, that they had a just feeling for it, Mr. Hay considers, is rendered evident by the paintings in Egyptian tombs, and in the remains of Pompeii and Herculaneum. From coloured sketches made on the spot, and from other sources, Mr. Hay is of opinion, that the knowledge of the Romans, at the time when the cities mentioned were in prosperity, must have been of the most scientific nature. We doubt this, because the Romans were not a scientific people ; and we think the harmony of their colouring may be accounted for, from their artists being men whose genius for that department of art was such as to impel them to adopt it as a profession. Many of the greatest painters and sculptors of modern times, we are persuaded, know very little of the science of their art ; but are, or have been, chiefly guided by their feelings, and by the keen sense, implanted in them by nature, of what is beautiful in combinations of colours and of forms. We offer this view of the subject, however, with due deference to the opinion of those who have paid more attention to it than ourselves, and more especially to Mr. Hay, who says :—

" Harmony of colouring is, at the present period, evidently becoming one of the characteristics of our national school of painting ; and this will, no doubt, eventually lead to a knowledge of it amongst the more humble class of colourists to which I belong. Yet I consider it a necessary step towards the attainment of this knowledge, that the simple rules, or groundwork, of the art should be disseminated amongst us in a popular form. With these views, but confining myself to an application of those rules to my own humble profession, I published this little treatise. The success of the first and second editions, my experience since, and, above all, the study of Field's scientific and excellent works *On Chromatics*, have induced and enabled me, not only to remodel, and, I trust, greatly improve, the present edition, but to extend its usefulness, by adapting it to variously coloured manufactures ; and, indeed, to every case where colours are brought together to produce effect. Harmonious arrangements of colours being such combinations as, by certain principles of our nature, produce an effect on the eye similar to that which is produced by harmonious music on the ear ; and, as a remarkable conformity exists between the science of colour and that of sound, in their fundamental

principles, as well as in their effects, I shall probably best pave the way to a proper comprehension of the former by tracing this analogy; the more especially, as the science of music is so much more generally understood. This analogy will help to show, that the laws which govern colour are as irrefragable, and, at the same time, as practically necessary to the colourist, in art, manufacture, or decoration, as those which govern sound are to the musician." (p. 4.)

We pass over several experiments made by Mr. Hay, to satisfy himself that "there are only three primary homogeneous colours in nature," to the author's comparison of colours with musical sounds.

"It is well known to all who have studied music that there are three fundamental notes, viz. C, E, and G, which compose the common chord, or harmonic triad; and that they are the foundation of all harmony. So, also there are three fundamental colours; the lowest number capable of uniting in variety, harmony, or system. By the combination of any two of these primary colours, a secondary colour, of a distinct kind, is produced; and, as only one absolutely distinct denomination of colour can arise from a combination of the three primaries, the full number of really distinct colours is seven; corresponding to the seven notes in the complete scale of the musician. Each of these colours is capable of forming an *archeus*, or key, for an arrangement, to which all the other colours introduced must refer subordinately. This reference and subordination to one particular colour, as is the case in regard to the key-note in musical composition, gives a character to the whole. This characteristic of an arrangement of colour is generally called its tone; but it appears to me that this term is more applicable to individual hues, as it is in music to voices and instruments alone. Yet, to avoid obscurity, I shall continue to use it in the sense in which it is generally applied to colouring. From the three primary colours, as will be afterwards shown, arise an infinite variety of hues, tints, and shades; so that the colourist, like the musician, notwithstanding the extreme simplicity of the fundamental principles upon which his art is built, has ample scope for the production of originality and beauty in the various combinations and arrangements of his materials. The three homogeneous colours, yellow, red, and blue, have been proved by Field, in the most satisfactory manner, to be in numerical proportional power as follows: yellow, three; red, five; and blue, eight. When these three colours are reflected from any opaque body in these proportions, white is produced. They are then in active state; but each is neutralised by the relative effect that the others have upon it. When they are absorbed in the same proportions, they are in a passive state, and black is the result. When transmitted through any transparent body, the effect is the same; but, in the first case, they are material, or inherent; and, in the second, impalpable, or transient. Colour, therefore, depends entirely on the relative or refractive power of bodies, as the transmission or reflection of sound does upon the vibratory powers.

"From the combination of the primary colours, the secondary arise; and are, orange, which is composed of yellow and red, in proportion of 3 and 5; purple, which is composed of red and blue, in the proportion of 5 and 8; and green, composed of yellow and blue, in the proportion of 3 and 8. These are called the accidental, or contrasting, colours to the primaries; with which they produce harmony in opposition, in the same manner in which it is effected in music by accompaniment; the orange with the blue, the purple with the yellow, and the green with the red. They are, therefore, concords in the musical relation of fourths, neutralising each other at sixteen. This neutralising, or compensating, power, as will be afterwards shown, is the foundation of all agreement and harmony amongst colours; and upon it depend, also, the brilliancy and force of every composition. From the com-

bination of these secondaries arise the tertiaries, which are also three in number, as follows: olive, from the mixture of the purple and green; citron, from the mixture of the green and orange; and russet, from the mixture of the orange and purple. These three colours, however, like the compounds produced by their admixture, may be reckoned under the general denomination of neutral hues, as they are all formed by a mixture of the same ingredients; the three primaries, which always, less or more, neutralise each other in trinity. The most neutral of them all being grey, the mean between black and white, as any of the secondaries are between two of the primaries, it may appropriately be termed the seventh colour. These tertiaries, however, stand in the same relation to the secondaries that the secondaries do to the primaries; olive to orange, citron to purple, and russet to green; and their proportion will be found to be in the same accordance, and neutralising each other integrally as 32. Out of the tertiaries arise a series of other colours, such as brown, marone, slate, &c., in an incalculable gradation, until they arrive at a perfect neutrality in black, as shown in diagram 2. To all of these the same rules of contrast are equally applicable.

"Besides this relation of contrast in opposition, colours have a relation in series, which is their melody. This melody, or harmony of succession, is found in all the natural phenomena of colour. Each colour on the prismatic spectrum, and in the rainbow, is melodised by the two compounds which it forms with the other two primaries: for instance, the yellow is melodised by the orange on the one side, and by the green on the other; the blue, by the green and purple; and the red, by the purple and orange. Field, in his excellent *Essay on the Analogy and Harmony of Colours*, has shown these coincidences by a diagram, in which he has accommodated the chromatic scale of the colourist to the diatonic series of the musician, showing that the concords and discords are also singularly coincident."

We have now given as distinct an idea as we can of Mr. Hay's *Treatise*, without the aid of his coloured plates; and we have done so with a view of showing every young architect, builder, or other person connected with houses or furniture, how much they may gain from Mr. Hay's book. In short, there is no other such work on the subject of which it treats; and none of which it may be so truly said, that it ought to be in the hands of every one at all connected, however remotely, with building and furnishing.

We now proceed to the second part of our duty, that of quoting some of Mr. Hay's remarks on art and artists generally.

"It is remarkable, that, while we are so far behind our Continental neighbors in the application of the rules of art to our manufactures, the British school of painting should have risen so far above that of every other country in the world. And this is not all; for it must be evident to every one who may be in the habit of attending our annual exhibitions of modern pictures, that mediocrity of talent in the fine arts is multiplying beyond all probable means of employment. I have had a good deal of experience in matters of this kind, from having had, for upwards of twelve years, seldom less, at any time, than ten or twelve apprentices to instruct in ornamental painting. I trust it will not, therefore, be reckoned presumptuous in me giving an opinion in the matter.

"In the first place, I believe this want of ornamental designs, as Mr. Skene has distinctly stated in one part of his evidence, to arise as much from the nature of the instruction given, as from the want of opportunities afforded for study. It is seldom that the young men who are admitted to our drawing academies consider their studies as merely intended to improve them in

the useful arts to which they may be bred : they almost uniformly imbibe the idea of rising into a higher sphere ; and seem to have no other ulterior object in their studies than to leave their humble calling at the expiration of their indenture, and become artists. I speak from particular facts which have come under my own observation. Many an industrious young man, of mediocre talents, but possessing sufficient to have raised him to the head of ornamental painting, have I known sacrifice himself to a life of penury and neglect from this vain idea. Various reasons may be assigned for the prevalence of this mania amongst young men who have had opportunities of studying the art of drawing : the flattery of their friends ; injudicious patronage ; the desire to become, by the quickest and easiest means, a gentleman ; and various others, over which no national institution can have any control. The most prominent cause, however, seems to be, that nothing is reckoned a work of art unless it be a picture. No matter how superior an ornamental design may be, or how much study and knowledge may have been required to produce it, still the production of such, although it may increase the wealth of the individual, cannot raise him one step in the scale of society ; he is only a mechanic in the eyes of the public. On the other hand, no sooner does the youth lay aside his useful implements, and dash off upon canvass something like a landscape (often with no eye to nature, but in servile imitation of some popular painting), than he seems to be, by common consent, raised to the dignity of an artist. In short, those branches of the fine arts that are applicable to the manufactures, and to other departments of useful industry, do not, in this country, hold that relative situation to the more intellectual and higher branches to which they are fairly entitled. This is not the case in Italy, as I am informed by an artist who has studied for several years in that country. He says that, in the Academy of the Fine Arts at Venice, there are distinct professors in the following departments of art : architecture, painting, sculpture, engraving, perspective, and ornament ; and that in this latter branch the pupils are so numerous that, the professor requires an assistant. Their examples are not only the best ornamental models of antiquity, but fruit, flowers, and foliage. Every fifteen days they are required each to make an original design within a given number of hours (precautions being taken to prevent deception) ; and, according to its merits, advancement and preference are bestowed.

"Dr. Ure states that 'The town of Lyons is so conscious of the value of such studies, that it contributes 20,000 francs per annum to the government establishment of the School of Arts, which takes charge of every youth who shows an aptitude for drawing, or imitative design of any kind, applicable to manufactures. Hence all the eminent painters, sculptors, and even botanists and florists, of Lyons become eventually associated with the staple trade, and devote to it their happiest conceptions.' I feel quite assured that, were a similar course followed in our academies, a sufficient portion of that genius which at present seems to be all flowing into one channel, would, like a mill-lead [stream] taken from a river, be directed from that which is merely ornamental, to that which is essentially useful and beneficial to the country. Art would not suffer from this ; on the contrary, where real genius was discovered, the facilities of encouraging it would be greater, and we should have less of that misapplied, and often selfish, sort of patronage, which fosters mediocre talent until it is factitiously raised to where it cannot stand, and is then, by the desertion of such injudicious patrons, allowed to fall far below its own natural level." (p. 61.)

Mr. Hay concludes his work with "A few Elementary Instructions in Ornamental Drawing, with Hints to the more advanced," which are admirably adapted for enabling any young mechanic to teach himself linear drawing, shading, and the simpler kinds of perspective. We repeat, that we cannot too strongly recommend Mr. Hay's work to our readers.

ART. III. *A Practical Treatise on Locomotive Engines upon Railways; a Work intended to show the Construction, the Mode of Acting, and the Effect of those Engines in conveying heavy Loads; to give the Means of ascertaining, on an Inspection of the Machine, the Velocity with which it will draw a given Load, and the Results it will produce under various Circumstances, and in different Localities; to determine the Quantity of Fuel and Water it will require; to fix the Proportions which ought to be adopted in the Construction of an Engine to make it answer any intended Purpose, &c.: with Practical Tables, giving at once the Results of the Formulæ; founded upon a great many new Experiments, made on a large Scale, in a daily Practice on the Liverpool and Manchester Railway, with many different Engines and considerable Trains of Carriages; to which is added an Appendix, showing the Expense of conveying Goods, by Locomotive Engines, on Railroads. By the Chev. F. M. G. de Pambour, formerly a Student of the École Polytechnique, late of the Royal Artillery, on the Staff in the French Service, Knight of the Royal Order of the Légion d'Honneur, &c., during a Residence in England for Scientific Purposes. 8vo. Weale, London, 1836.*

THIS very excellent work appeared, in French, in the beginning of the year 1835; and the public are certainly much indebted to Mr. Weale for having produced it in a respectable English dress. We cannot give a better idea of the work, than by the following quotations from the Introduction:—

"There exists no special work on locomotive engines. Two writers, Wood and Tredgold, have, indeed, in England, slightly touched upon that matter, but only in a subordinate manner, in treatises on railways; and, besides, they both wrote at a time when the art was scarcely beyond its birth. Consequently their ideas, their calculations, and even the experiments they describe, have hardly any relation to the facts which actually pass before our eyes, and can be of no use to such as wish to acquire a knowledge of these engines, and their employ on railways.

"Many questions had not even been entered into, others had been solved in a faulty manner. New researches on the subject became, therefore, indispensable. This work will, in consequence, be found completely different from any thing that has been published hitherto. No facts will be quoted, but such as result from actual observation; no experiments related, but those made by the author himself, on a new plan, and with new aims; finally, no theory exposed, but such as is derived from those experiments.

"If at first sight it appear astonishing, that no theory of locomotive engines should exist, the surprise ceases on considering that the theory of the steam-engine itself, taken in general, has not yet been explained. It was natural to suppose, that, respecting a machine at present in such universal use, and on a subject of such importance, every thing had been said, and every explanation given, long ago. Far from this being the case, however, not even the mode of action of the steam in these engines has been elucidated. In the absence of such indispensable knowledge, all theoretical calculations were impossible. Suppositions were put in the place of facts. In consequence, we have seen very able mathematicians propose, on the motion of the piston in steam-engines, analytical formulæ, which would certainly be exact, if all things went on in the engine as they suppose; but which, not being founded on a true basis, fall naturally to the ground in presence of facts. From this also results

that, in practice, the proportions of the engines have only been determined by repeated trials, and that the art of constructing them has proceeded hitherto in the dark, and by imitation.

"Locomotive engines being first of all steam-engines, we cannot advance in the researches we undertake, without solving, at the same time, the question relating to steam-engines in general. There is even a remarkable point to be observed, which is, that of all sorts of steam-engines, locomotive ones are those which, in their application, have to overcome the least complicated resistance, and are most susceptible of a rigorous appreciation. This circumstance renders them, therefore, more proper than any others for furnishing an explanation of general facts common to all those machines. The theory once satisfactorily established in regard to locomotive engines will, of course, apply equally to all sorts of steam-engines, and more especially to those which, like locomotive ones, work at a high pressure.

"We flatter ourselves, therefore, that our researches, although apparently confined to locomotive engines, may, at the same time, illustrate the principal points of the theory of steam-engines in general.

"All the experiments related in the work were made by *ourselves*, with all the care and attention they required. Some were made in company with engineers of known talent and ability, as Mr. J. Loke of the Grand Junction Railway, and Mr. King of the Liverpool Gas-Works. We give them in all their details, with a view that every one may judge of their accuracy; and we mention the place and date of each experiment, in order to facilitate their verification by referring to the books, on which is registered the weight of each of the trains.

"In regard to the facility we had of making these numerous experiments, we must say that, having applied to the heads of the most important undertakings of the sort in England, we were permitted, without restriction, to penetrate into the workshops, to take every measure, to collect all the documents concerning the expenses, and, lastly, to make any experiment that appeared necessary to us.

"It is with pleasure we acknowledge in the English character the liberality we have found in the whole course of our investigations.

"We have studied the subject with all the interest, and, we might say, with all the enthusiasm, it excited in us. In fact, what a subject for admiration is such a triumph of human intelligence! What an imposing sight is a locomotive engine, moving without effort, with a train of forty or fifty loaded carriages, each weighing more than ten thousand pounds! What are henceforth the heaviest loads, with machines able to move such enormous weights? What are distances with motors which daily travel thirty miles in an hour and a half? The ground disappears, in a manner, under your eyes; trees, houses, hills, are carried away from you with the rapidity of an arrow; and, when you happen to cross another train travelling with the same velocity, it seems in one and the same moment to dawn, to approach, and to touch you; and scarcely have you seen it with dismay pass before your eyes, when already it is again become like a speck disappearing at the horizon.

"On the other hand, how encouraging is the evident prosperity of these fine establishments! How satisfactory it is to acquire the proof that the Liverpool railway produces 9 per cent interest, and the Darlington one an equal profit! With what confidence must we not anticipate the future state of such undertakings, when we know that, besides the above mentioned annual interest, the shares of the Liverpool Railway have risen, in four years, from 100*l.* to 210*l.*; and those of the Darlington Railway, in eight years, from 100*l.* to 300*l.*? What may not society at large expect in future from this new industry, which will augment ten-fold the capital and produce of the country, by the immense influence of speed and economical conveyance!

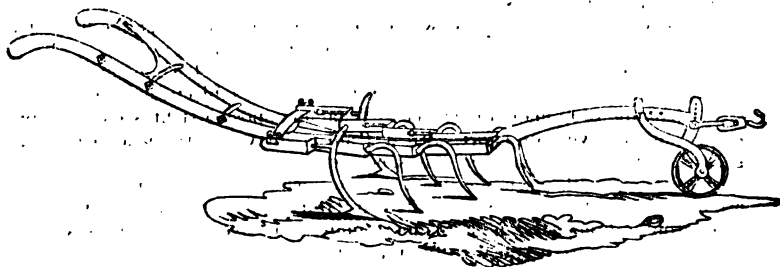
The work is divided into nine chapters, as follows: I. Description of a Locomotive Engine. II. On the Pressure in

Steam-Engines. III. On the Friction of Railway Carriages. IV. On the Friction, or Resistance, of Locomotive Engines. V. General Theory of the Motion of Locomotive Engines. VI. On some accessory Dispositions, and their Effect. VII. Of the Curves and Inclined Planes. VIII. Of the Adhesion. IX. Of the Fuel. An Appendix treats of the Haulage by Locomotive Engines on Railways.

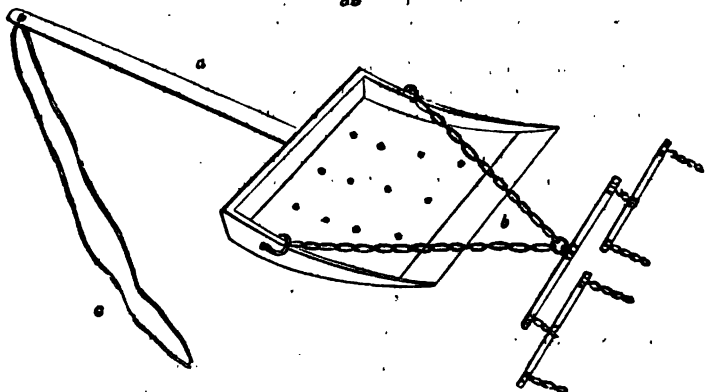
ART. IV. *Description of a Practical and Economical Method of excavating Ground, and forming Embankments for Railways, &c.; with practical Observations on the Construction of Railways.* By W. Brunton, Civil Engineer. Pamph. 8vo, two large folding plates. London, 1836. 2s. 6d.

THE object of this pamphlet is to explain the construction, and point out the use, of an apparatus for excavating ground, for which the author has obtained a patent. In making alterations on the surface of ground for agricultural and landscape-garden-ing purposes, a very considerable saving, where there is a great deal of work to be done, is sometimes effected by the alternate use of an implement like Finlayson's harrow (*fig. 98.*) and, one like the land-leveller (*fig. 99.*)

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This last machine has been a good deal used in Scotland by farmers for levelling down high ridges and other inequalities in fields; and, though we do not think it adapted for engineering purposes, yet there is a kind of lifting cart, for which a patent was taken out, some years ago, which might be substituted. This cart, or some modification of the dredging machine, might follow a stirring instrument. Both these machines might be moved by horses, or a stationary steam-engine; and both, we think, would have these advantages, that they would neither be costly at first, nor be apt to be put out of repair by the occurrence of large stones in the soil. The effect produced would be like the Indian mode of ploughing, by repeated scratching,



by repeated stirrings and liftings. After all, though this mode effects a great saving of labour in agriculture and landscape-gardening, we question whether much would be gained by it in engineering.

Mr. Brunton's machine appears to be constructed with a view to operating on the same principle as the two implements mentioned; viz. first stirring the soil, and then lifting it and carrying it away; but, whether it would ultimately prove economical or not, all circumstances taken into consideration, experience alone must determine. As is usual, the author of the invention is sanguine enough of success; his conclusion being, that "ground may be cut, moved a mile, and laid in the embankments, for less than one half of the usual cost." (p. 19.)

In the practical observations on the construction of railways, there are some remarks which appear to us of great importance. It appears that few railways are either paying, or likely to pay; not so much from their first cost, as from the expenses of keeping them in repair, and repairing and renewing the locomotive engines. He says, —

"I have narrowly watched the expedients resorted to, and also their effects; and, having extensive experience in the application of heat to generate steam, I feel confident that the cause of the expense in the repairs of locomotive engines is the intensity of the heat now applied to the boilers, the consequent deterioration of the tenacity of the parts exposed to its action, and the expansion and contraction of parts so contiguous as to occasion fracture; nor do I imagine that any practical engineer will call this in question. But how is it to be obviated? I answer, by increasing the area of the fire, reducing its intensity, and more uniformly applying the heat to the boiler. But this is next to impossible where the rails are only 4 ft. 8 in. asunder, as upon the Liverpool and Manchester railway; and, until we have a wider base on which to carry locomotive boilers, their destruction, and the cost of repairs, in my opinion, will continue to be an alarming item of expense.

"I am fully aware of the increased cost attendant on such a measure, and also of the practical objections which may be urged against a wide railway; nor do I overlook the inconvenience connected with departing from the esta-

blished width of the Liverpool and Manchester, and the branches united with it; but all these, in my opinion, are of minor consideration with the reduction to proper and reasonable limits of the expense of locomotive engines.

"It is certain that the present distance of the rails was fixed upon at a time when we were destitute of the experience now supplied by the Liverpool and Manchester; and, believing that very great benefit would accrue from an increased width of railway as a preliminary measure, I would respectfully suggest the propriety of investigating this subject; whilst, if there be any advantage in what I propose, it may be adopted upon the railways now in progress, or projected."

ART. V. *Literary Notices.*

LAOCOON; an essay on the relative limits of poetry and painting: translated from the original German of Gotthold Ephraim Lessing, by William Ross, late Professor of Painting and Sculpture in the Andersonian University, Glasgow; is in the press, and shortly will be published. This work is to be published by subscription, for the following reasons, which are given by the author in his prospectus. "The Laocoon of Lessing being a work of distinguished and acknowledged merit, it is somewhat surprising, that, with the exception of a few extracts given some years ago in a popular periodical, no part of it should have yet appeared in an English dress. But publishers say that the subject is one in which general readers do not take much interest; that, though there is a class to whom such a work would be very acceptable, it can only be made known to that class by being very extensively advertised; and that thus an expense would be incurred, which it is not probable the limited sales could defray. Believing, however, that the merits of the work cannot fail to recommend it to many readers, the translator is desirous of offering to the public a complete English version, the execution of which has occupied a part of his leisure hours; and, wishing to secure himself against the risk of loss (though gain is not his object), he has adopted the plan of publishing it by subscription." There is a very respectable list of subscribers appended.

MISCELLANEOUS INTELLIGENCE.

ART. I. *Foreign Notices.*

FRANCE.

A New Building for the Royal Library. — M. Ben. Delessert, one of the members of the Chamber of Deputies, has printed and distributed a *Mémoire sur la Bibliothèque Royale*, illustrated by two large folding plates, of which work a very interesting account is given in the *Literary Gazette* for April 9. We intend, if possible, to procure a copy of the work; but, in the meantime,

we give the following extracts from the *Literary Gazette*, because we think they contain some excellent hints on the general principles of designing libraries, museums, &c., and even booksellers' shops :—

"The advantages of a circular building for a library are," says the author, "that less space will be required, and that the books will be more accessible. The librarians and the readers will be placed in the centre of a vast rotunda, upon which eight grand galleries will abut. These galleries will be formed by walls disposed in diverging radii; and on the two sides of the walls will be placed the main body of the library. As this arrangement admits of the use of both sides of the walls, there will be room for double the number of books, which will be near the centre of the room, and can be easily procured; the keeper of the library, also, being installed in the middle of the rotunda, will have a view of all the galleries, and of all the persons in the room. This circular form will hold 800,000 volumes in a space of 1900 *toises carrées*, or 11,400 square feet. The building will also be incombustible; stone, marble, iron, pottery, and zinc being the only materials employed; the edifice to be warmed by steam, brought from an isolated building. Each room will be divided in its height by four iron galleries. The bookcases to be glazed, and not more than 6 French feet in height: so that there will be no occasion for movable ladders, or steps. Access to the galleries will be obtained by spiral iron staircases, placed behind the columns of the rotunda. All the books will be preserved from dust, and under lock and key; and the total expense of this vast library will be 8,000,000 of francs, or about 320,000*l.* But it will not cost the government anything; because the buildings at present occupied by the Royal Library, in the Rue Vivienne, the Rue Richelieu, and the Rue Neuve des Petits Champs, have been valued at the same sum, and might be sold to defray the expense of the new building."

M. Delessert does not seem disposed to admit the last official account of the number of volumes in the Royal Library, viz. 700,000 printed books, and 80,000 MSS.; but reduces the quantity to 600,000, and allows for additions to the library of 12,000 volumes a year. He does not place his books in double rows, but finds space for 800,000 volumes without resorting to this measure. The books to be arranged in the following eight grand divisions:—Theology, Jurisprudence, Government, Commerce and Finance, Natural History, the Sciences and Arts, General Literature, History and Voyages and Travels: these divisions to be contained in the eight galleries, which will be subdivided into 56 equal parts. "This immense collection of books," says M. Delessert, "will be placed in proximity with the readers, for it will not be necessary to traverse more than 120 ft. to procure any book; whereas, in square buildings with transverse galleries, this distance is often increased, allowing for going and returning, to 2700 ft., or nearly a quarter of a league; so that nothing short of a railroad would enable the attendants to bring the books to the readers in any reasonable time. The whole building may be completed in three years. As to the exterior decoration of this new library, and its union with the Louvre and the lateral galleries, whether by a portico, or a winter promenade, or a transverse gallery, it is not necessary for me to speak. Should this plan of a circular library be adopted, the Carousel will become one of the most magnificent squares in Europe; the Louvre situated at one extremity, the library in the centre, and the palace of the Tuilleries, the obelisk of Luxor, and the two triumphal arches, on the same line, will present an assemblage of fine objects, scarcely to be equalled in any part of the world." A commission has been appointed to enquire into the practicability of M. Delessert's plan, and sanguine hopes are entertained of its adoption by the government. This interesting *brochure* is illustrated by two large folding plates, which convey a very clear idea of the possibility of erecting the edifice in question, and of completely adapting it to the purposes for which it was designed. (*Literary Gazette*, April 9.)

The Municipal Council of Paris has appropriated 5,500,000 francs to be expended this year in architectural improvements. When once Lon-

don is governed, as a whole, by a council, as we have long ago suggested in the *Gardener's Magazine*, when speaking on the subject of sewerage, and as has lately been ably treated in the *London and Westminster Review*, we, also, shall have annual grants for similar purposes; and something like unity of system will be followed in our public improvements.

ART. II. Domestic Notices.

ENGLAND.

KENT.—*Architectural Improvement at Gravesend.*—You cannot walk a dozen yards in Gravesend without stumbling over bricks and mortar; and such is the present rage for building in this town, that there are no less than seven architects who are known to be employed here at this time. Mr. Wilde from Brighton is engaged at the new baths; Mr. Mee has just finished a new Proprietary School; Mr. Decimus Burton has prepared a plan for laying out a large plot of ground in the high road, adjoining the chapel, for building; Mr. Lamb is drawing to a conclusion with the Tivoli Tavern; Mr. Jenkins has just completed some houses in the road for the Building Company; Mr. Shepherd has marked out the roads on the Windmill Hill preparatory to building; and Mr. Tierney Clarke, I believe, is employed at the Terrace Gardens. With so much professional assistance, Gravesend, I should think, will assume a very different, and much improved, appearance in a short time. The public baths are to be in the Moorish style of architecture, and the works are proceeding very rapidly. The Tivoli Tavern is in the Italian style, and, I understand, is to be completed before April. It is a large building, situated in a very eligible spot; and, as it possesses every convenience for an extensive business, I have no doubt, from its elevated site, which commands such beautiful views, varied by land, wood, and water, and its possessing so many pleasant sitting-rooms, it will become very attractive. The Proprietary School, designed by Mr. Mee, is a very excellent composition in the Elizabethan style, and is a great ornament to the town. Every taste may now be satisfied; for we have not only the architects before mentioned, with all their profound study and experience, but amateurs innumerable; so that, if there is no great unity to be found in our elevations, there is the other essential quality, variety. We have, on one side, a grand house, decorated with columns and pilasters, enriched with capitals, cornices, and pediments, containing every accommodation for a large and wealthy family, well calculated to display the luxuriant taste of the proprietor; and adjoining to it is placed a modest, unassuming, plain brick dwelling, displaying the equally unassuming taste of its quiet proprietor, whose greatest ambition is just to keep his parapet half as high as that of his magnificent neighbour. This is the state of the building mania at Gravesend; and long may it continue to flourish! As I take some interest in architecture, and have just as much knowledge as will keep me from building without professional advice, I walk round to view the growth of these prodigies, and meet every where with the works of more architects. At Northfleet, Mr. Kendall is preparing for extensive improvements; and his embankment will be an excellent work: it is faced with Maidstone rag-stone built in cement. This improvement is in a very forward state, as are, also, the stairs for the landing-place. As I walked a little farther, I stumbled over more bricks and mortar: a cottage, at Northfleet, on Mr. Hyatt's estate, appeared to me evidently designed by an architect; and, upon enquiry, I found it was by Mr. Lamb. There is also a barn here, built something out of the ordinary way; but I should think Mr. Lamb had nothing to do with this. I continued my walk now along the high road; and, as I advanced, more new buildings presented themselves to my view, in various styles, each possessing merit in some point or other. Those built by Messrs. Francis and White, at Swanscombe, are well calculated to display their cement. Near this, on the London road, is a Gothic lodge, built with

square stone and cut flint, possessing considerable novelty in its design, and forming a very pleasing effect in the road : this, I understand, is also Mr. Lamb's production. From this lodge I turned into the field opposite to Ingress Park, where Mr. Alderman Harmer has been building a splendid mansion : it is entirely of stone, and is in the Gothic style. After walking round the beautiful park, and admiring the building from various situations, I entered the quiet, clean, and pleasant village of Greenhithe, and ascertained that Mr. Moring is Mr. Harmer's architect. I just refreshed myself after my ramble, and retraced my steps to Northfleet; when, instead of returning by the water side, I took the high road, just to look at some of the buildings erecting in that situation. There are several pleasant villas; but I could not ascertain that any architect has been employed on them, till I came to the new parsonage near the fine old church at Northfleet. The parsonage is designed by Mr. Griffiths in the Gothic style, and built with brick and stone dressings. I returned to Gravesend, and could not help reflecting upon the great difference in the habits of the London citizens, which, in a very few years, has caused so great a demand for these comfortable and elegant moderate-sized residences, to which the man of business of the present day may retire, and have the benefit of a healthy spot for his family; while, by the convenient and cheap mode of travelling afforded by the steam-boats, he is enabled to enjoy his social circle amidst the greatest blessings nature can bestow, an open country and free air. More landing-places are talked of for the steam-boats to come to: there are already three at Gravesend, and one at Northfleet; and others talked of there, and at Greenhithe. The principal pier at Gravesend was designed by Mr. Tierney Clarke; Mr. Kendall has made a design for a new one at Northfleet; and Mr. Lamb has designed one for Greenhithe. The distance from Gravesend to Greenhithe is about four miles; and in that short space there are no less than ten architects engaged, all of whom have been employed within the last two or three years, besides amateurs. At some future time, I will enumerate all the principal new buildings; but now I must cease, as I fear I have already occupied too much of your valuable time; and, if these communications will be of the least service for your excellent Magazine, I shall feel happy in contributing my little aid to the common stock. — *An Amateur. Gravesend, Feb. 29. 1836.*

ART. III. Queries and Answers.

WINDOW Sashes shaking by the Wind. — Your correspondent, A. W. S., at p. 96., has quite mistaken the reason of sashes shaking, as also the cure. He says, "The only effectual remedy I know is, to have the window-frames made of well-seasoned timber; because it is the shrinking of the sash which gives it room to play backwards and forwards in the groove in which it runs." Any person conversant with the construction of sashes will know that the shrinking of the timber can have no effect upon the sash, in giving it more room between the beads; because, if it were all made of perfectly green timber, the sash-frame, or pulley-style, would shrink in the same proportion as the sashes; and it is quite impossible to make them fit so full between the beads, when new, as not to shake, without causing the much greater evil of having them entirely fast after a coat or two of paint is given to them.

I have frequently entirely secured sashes from shaking by having the meeting-rails of sashes planed a little hollow on the sides where they meet together; and dressing off so much, that, when they are pressed together in the centre by a good sash-fastener, such as are commonly used, the sash-fastener, if properly set on, will cause both sheets to press firmly against the parting bead; and this will completely prevent any shake in the sashes, provided they are properly managed by the joiner, who may still allow them

sufficient play to move freely when the sash-fastener is loosed. In some windows it will be necessary to remove the top and bottom inner beads, and fix them closer to the sashes than the side beads, to prevent the top and bottom parts from shaking, as well as the centre; and these, if constructed a little on the bevel on the sides next to the sashes, will act in a similar manner to wedges, when the sashes are shut home, and will not prevent them from sliding freely.

As I have been much benefited by reading communications from others in your Magazine, I consider myself under some obligation to give any information I am capable of in return; and shall be glad if this communication be found of any service to those labouring under the inconvenience complained of. — *Wm. Metcalf, Builder. Bradford, Yorkshire, Feb. 29. 1836.*

The best Practical Treatise on Road-making. — Can any of your correspondents tell me which is the best? — *W. K. Kington, Warwickshire, March 6. 1836.* [Sir Henry Parnell's *Treatise on Road-making*, 1 vol. 8vo, mentioned in Vol. I. p. 94., and published in 1832, we believe to be the best work on the subject of roads extant. — *Cond.*]

ART. IV. *Institute of British Architects.*

MARCH 28. 1836. — J. B. Papworth, V. P., in the Chair. The minutes of the last Meeting were read. The balance in the treasurer's hands appeared to be 239*l.* 1*s.* 5*d.* The following gentlemen were nominated, or elected: — *As Honorary Member:* The Ven. Robert Hurrell Froude, Archdeacon of Totness, Devonshire, was declared duly elected. *As Fellow:* Anthony Salvin, Architect, Somerset Street, Portman Square, was put in nomination.

The secretary announced that the following donations had been received since the last Meeting: — Mr. Martin, Hollar's View of Ancient London; Messrs. Freeman, specimens of stone, and a print of the roof of Westminster Hall; B. Ferry, Esq., large paper copy of his work *On Christ Church, Hants.*, 4to; Messrs. Ackermann, *Pugin's Designs for Iron and Brass Work*, 4to; J. Brunel, Esq., 12 copies of the elevation of an experimental arch; Society of Arts, 2 parts (1 vol.) of *Transactions for the Years 1833–4, and 1834–5*, 8vo; P. F. Robinson, V. P., 13 Gothic casts from York (St. Mary's Abbey); H. E. Kendall, Jun., Associate, 2 copies of Perspective View of proposed Greenwich Pier; T. L. Donaldson, Hon. Secretary, copy of his work *On Modern Doorways*, 4to. Resolved, that the acknowledgments of the Institute are due to the gentlemen above named, for their several contributions. Resolved, that the subjects for the Honorary Premiums shall be those approved and recommended by the Council. (See p. 185.)

The Council having recommended that a committee be formed for investigating Mr. Berhardt's plan for Warming and Ventilating Buildings, &c., and that Dr. Faraday, Dr. Turner, Messrs. Brande and Hiort, and other scientific gentlemen, be invited to cooperate in the investigations: Resolved, that the above recommendation is approved and confirmed, and that the following Fellows be members of the said Committee, with such others as may be disposed to add their names, so that the whole number of Fellows do not exceed ten: — Messrs. Papworth, Robinson, Barry, Kendall, Rhodes, Inman, Scoles, Thomson.

Charles Fox, Esq., Engineer, then read a paper upon the construction of Skew Arches, with explanatory drawings and models. [This paper appeared in the *Phil. Mag.* for April; and the proprietors of that work, and Mr. Fox, have kindly permitted us to republish it in the *Architectural Magazine*, where it will appear in June next.] Resolved, that the cordial thanks of the Meeting be presented to Mr. Fox, for his able and lucid developement of the subject.

Mr. Goldicutt, Hon. Secretary, read a paper upon Ancient Wells, and their decorative character. Resolved, that the acknowledgments of this Institute are due to Mr. Goldicutt, for his interesting essay and illustrations.

April 11.—P. F. Robinson, V. P., in the Chair. The minutes of the last Meeting were read. The balance in the treasurer's hands appeared to be 209*l.* 19*s.* 11*d.* The following gentlemen were balloted for, and declared duly elected:—*As Fellow*: John Shaw, Architect, Christ's Hospital. *As Associate*: Harvey Eginton, Architect, Worcester. Sir Walter R. Farquhar was elected as Treasurer, to fill the vacancy caused by the death of his father, the late Sir Thomas Farquhar. The following members were elected as auditors, pursuant to Section X., to examine the balance sheet, which is to be laid before the Annual General Meeting in May next: Thomas Cundy, Fellow; and Charles Edward Lang, Associate.

The secretary announced that the following donations had been received since the last Meeting:—C. W. Dilke, Esq., *Le Fabbriche di Palladio*, 4 vols. small 4to, plates; Owen Jones, Esq., No. 1. of his work *On the Alhambra*, printed in colours and with gold; *Frazer's Literary Chronicle*, part iv., from the editor; Thomas Hamilton, Fellow, of Edinburgh, drawings of the temporary room erected for the Grey dinner, and plan and section of Dr. Reid's Class Room, Edinburgh.

The following letters were read:—One from M. Hebler, sent by desire of M. Beuth, His Prussian Majesty's Privy Councillor, and Director of the different Institutes for Arts and Sciences. This distinguished gentleman proposes to transmit, as soon as possible, copies of all the works which have been published in Prussia under his superintendence, accompanied by a full explanation of the Rules, &c., of the Institute for Architects in his country; in offering which he is desirous to testify the high regard entertained by him for the British Institute, in addition to his best wishes for its prosperity, from the great benefit it will be of to the architectural science in this country. The other letter was from M. Hittorf, who, after thanking the Society for electing him an Honorary and Corresponding Member, apologises for not having written to them sooner; adding, that the reason of his delay "was the desire of presenting, at the same time, to my esteemed colleagues, the work upon the *Modern Architecture of Sicily*, which I have just completed, and to which I add two other publications, for which I would solicit a place in the library that you have lately formed. One of these works is my *Translation of the Unedited Antiquities of Attica*; and the other contains the *Description and Representation of a Ceremony celebrated at Paris in 1820*; a ceremony that I conducted with the assistance of my friend Mons. Le Cointe, a highly distinguished artist, whom I should see with pleasure enrolled on the list of the Foreign Members of your Institute, as being one amongst the architects of our capital, who may be deemed worthy of such an honour." In conclusion, M. Hittorf observes: "It would afford me extreme satisfaction to know that my labours have been examined by the Members of the Institute, and to be thoroughly acquainted with the strictures to which they may have given rise. I should thus be enabled to profit by the erudition of highly distinguished men, in the other publications in which I am at present engaged."

Mr. W. Turner then read a preliminary discourse, as introductory to his series of Lectures on Geology.

The papers presented by George Gutch, Fellow, on Monday, 15th Feb., containing an account of the drawings and books of Sir C. Wren, Inigo Jones, and James Gibbs, Architects, preserved in the Radcliffe Library at Oxford, were read.

The Academy of Parma have elected Sir John Soane and W. Wyon, Esq., Honorary Members of their body, and T. L. Donaldson, Esq., Honorary Associate; the Academy of Vienna have also elected Sir John Soane and W. Wyon, Esq., Members; in consequence of the bronze impressions of the Soanean medal sent to these academies.

THE ARCHITECTURAL MAGAZINE.

JUNE, 1836.

ORIGINAL COMMUNICATIONS.

ART. I. *Anti-Vitruvianism.* By CANDIDUS.

IN my article on architectural pedantry (p. 149.) I noticed Mr. Hosking's opinion of Vitruvius, as given in his *Treatise on Building and Architecture*; and I shall now make a few further observations on the same work. Instead of dividing architecture into three distinct branches, viz. civil, military, and naval, he contents himself with saying that, unless otherwise expressed, the term is always understood to apply to the first-mentioned species. Many may consider both the term and definition given to it to be of very little moment; and yet I cannot help thinking it rather unfortunate that the same family appellation should have been bestowed on studies which have no connexion whatever with each other; or, rather, that a sort of relationship should be acknowledged, by formally pointing out distinctions which virtually imply such an alliance between the three as renders specific appellations necessary, in order to prevent the one from being mistaken for the other. It has never been thought necessary to explain that painting is divided into picture-painting and house-painting, notwithstanding such is the poverty of our language, that the gentlemen of the brush in the latter department have as good right to style themselves *painters* as the others. It is true we talk of "building ships;" still ship-building has nothing more to do with architecture, than "to build the lofty rhyme" has; which, by the same analogy, might be termed poetical architecture. I may now seem to be merely jesting; yet I hope that my serious meaning is obvious enough. To me it appears little else than an absurd piece of impertinence, for a writer on architecture to recognise any similarity between his pursuit and the similarly named ones, by any allusion at all to the latter. I may even go further, and think that architecture should be regarded as something, if not perfectly distinct, certainly distinguishable enough from mere building. The former bears, as Mr. Hosking very pertinently observes, the same analogy to the latter as literature does to language. Were I, therefore, called upon to define architecture, I should describe it to be the *poetry of building*. This, in my opinion, would be sufficiently expressive and intelligible, and convey at once what is, or ought to be, the true character of the art, and its pretensions to rank along with the other fine arts.

Such being my views of the subject, I dissent from those who would refer us to utility as one of the primary sources of beauty in architecture. Very far, however, am I from wishing to insinuate that utility ought to be disregarded: on the contrary, I hold it to be of paramount importance that a direct confederacy should be established between these two essential qualities; and that they should mutually aid each other. The definition I have just offered would remove all occasion for farther explanation on this head, were it not that some might wilfully misrepresent my meaning, and contend that I

would fain decry utility, as a very unimportant consideration. All that I intend to say is, that it is a subordinate quality. In spite of many curious examples of the contrary, sense, it is presumed, is considered indispensable to poetry, as is also an attention to grammatical precision: yet no one will say that either the one or the other constitutes poetry.

No one will attempt to deny that a man who may be an excellent grammarian, and who may understand all the different significations of words, and all the rules for combining them correctly into sentences, may be incapable of writing elegantly, even in prose; and yet we are told that it is sufficient for a man to understand the rules of the art, and the practical part of building, to enable him to produce what deserves to be considered a piece of architecture. Nothing can be farther from the fact.

However well qualified in other respects, no man can ever be an accomplished architect, without having the eye of a painter in all that relates to design. So far from coinciding in this opinion, I am aware that many consider, or affect to consider, such talent as injurious; and so it undoubtedly may become, unless properly regulated. By no means do I mean to say that other knowledge may be dispensed with; all I contend for is, that, in addition to it, the architect ought to possess a lively apprehension of, and relish for, beauty. No doubt, there are many who contrive to shift very well without aught of the recommendation upon which I have here insisted; for every day's experience convinces us of this. If, therefore, the argument established upon such a fact be incontrovertible, I must succumb to the weight of overwhelming evidence against me. It will perhaps, however, be found that such evidence makes strongly for my opinion; because, if discipline alone could achieve every thing, we should be surrounded by masterpieces of the art. The truth is, we set out with a fatal mistake at first, and, in consequence of that error, continue embarrassed and perplexed with glimpses of theories to which we can discover no clue. Most incontestably, mechanical rules are indispensable to the architect; yet, to maintain that they are all-sufficient, is nothing short of denying architecture to have any pretensions to rank as one of the fine arts. If it can be proved to admit of no other beauties than those which have already been given to the world, and which may be repeated at will; if it has no latent charms responding only to the call of master minds; why, then, the sooner we undeceive ourselves as to its real nature, the better. Let us honestly admit that the world has been imposed upon, and that henceforth architecture ought rather to be classed with arithmetic, and studies of that nature, than with those pursuits with which it has undeservedly been associated. It is one character of Vitruvianism to attach undue importance to rules, and to inculcate a slavish adherence to precedent; while for criticism it substitutes a pedantic jargon, full of impertinences and puerilities. Almost making a merit of dulness, it discountenances any attempts at advancing a single step forward, repressing genius, and anxious only to preserve respectable mediocrity. Under the most contradictory circumstances, it exacts an observance of precisely the same proportions, and endeavours to impose, as far as it is practicable to do so, one uniform methodical system that prescribes a set formula for every occasion. That every style of architecture must have certain leading rules is undeniable, because otherwise it could be no style at all; yet such rules go to furnish no more than its mere *accidence* and *syntax*; the materials of expression, not the matter, nor, in fact, even that quality which corresponds to what is called *style* in writing and in painting. If such be the case (nor do I perceive how it can very well be denied that accuracy, which consists in no more than a conformity with rules established upon precedent, is in itself but a negative merit, even where it does not happen to be attended by any actual drawback), on this lowest and most plodding species of architectural correctness by far too much stress has been laid, as well by critics as by architects themselves; and in this the indolence of both has found its account; it being so much easier to appear satisfied with what others are content to admire, than either to attempt to advance beyond that, or to

discuss the merits of what does not accord with any previous standard of criticism. When I say that too much stress has been laid upon what is in itself little more than elementary, I must not be understood as by any means advocating a disregard for such minutiae; quite the contrary: I only complain that these are thought all-sufficient; and that, instead of entertaining more enlarged views, instead of showing they are really acquainted with the powers of their art, architects, in general, content themselves with random and piecemeal beauties, and hardly make any attempt at originality.

It is not my intention to accompany Mr. Hosking step by step; but I cannot refrain from exhibiting his anti-Vitruvianism to my readers, and laying before them his opinion of a writer whose precepts have hitherto been recognised as laws. "It will be necessary here," he says, "to disabuse the public mind as to the merits of the works of Vitruvius, whose anilities have so long passed for authorities, that a writer would be suspected of prejudice who spoke of them slightly, without adducing evidence to prove them valueless; except, indeed, as records of the architectural practice, and the opinions and acquirements of an architect of a distant age." "*Valueless*" is, it must be owned, rather a strong expression: let us see, then, if Mr. Hosking can justify it. After objecting to the fables of Vitruvius about the origin of building, the invention of the orders, &c., as, in fact, only proving his ignorance, he thus continues:—"How far his knowledge of antiquity, that is, according to himself, of the works of the Greeks, extended, may be readily determined by comparing the designs of Greek structures, made by Perrault and others, according to the directions of Vitruvius, with the Greek structures themselves, as they exist at the present time, and are faithfully delineated in various modern works, but especially in Stuart and Revett's *Antiquities of Athens*. It is, indeed, not less strange than true, that not a single example of Greek architecture will bear out a single rule which Vitruvius prescribes, professedly on its authority; and not an existing edifice, or fragment of an edifice, is, in form or proportion, in perfect accordance with any law of that author; nor, indeed, are they generally referable to the principles he lays down."

This passage, alone, will convince my readers that Mr. Hosking has entered the lists against Vitruvius and the Vitruvianists, with right hearty good-will; nor can they very well doubt of his being a sufficiently bold man; yet will his intrepidity be surpassed by that of his opponents, should they, after this, attempt to vindicate their leader. As to poor Vitruvius himself, Mr. Hosking fairly knocks him on the head with the following *coup de grace*:—"A student would acquire as correct a knowledge of history and geography from *The Seven Champions of Christendom*, and *Gulliver's Travels*, as of architecture from the text of Vitruvius"! No one will accuse Mr. Hosking of dealing in hints or innuendoes, or of exercising much caution or delicacy in attacking firmly rooted prejudices. He evidently does not care to mince the matter at all; and, what is still worse, his adversaries seem to abandon the good cause, and to suffer him to rail with impunity; although the time has been when far less disrespectful language would have drawn down upon its author the most formidable anathemas. Nay, it is strange that some of those critics who took Mr. Wilkins to task for uttering what he did in regard to Vitruvius, should not have denounced so audacious an offender as the writer in the *Encyclopædia Britannica*; more especially as his opinions are likely to continue before the public eye after that, and a thousand other newspaper squabbles, shall have been forgotten. The only excuse to be offered for them is, that such critics are not in the habit of studying treatises on architecture; or else they preferred exhibiting that best part of valour, discretion, which certainly would dissuade them from alluding in any way to so formidable an antagonist as Mr. Hosking.

Our anti-Vitruvianist is, of course, no great admirer of the sexual system of architecture; and he accordingly, with more waggery than decorum, makes himself merry with Doric "gentlemen," Ionic "matrons," and Corinthian

"courtesans;" and with much besides, that he justly stigmatises as "puerilities," and "anilities;" and, to say the truth, few things can be more nauseatingly ridiculous than the mawkish twaddle of this sort, in which many seemingly grave writers on the subject have indulged. Discarding all such systematised nonsense and dulness; and that whimsical *mal-à-propos* friskiness of imagination, which can behold whatever it pleases, being always ready to exclaim, with Polonius, "Very like a whale!" discarding, we say, all these impertinences, Mr. Hosking is content to speak the language of plain common sense; while he evidently strives to judge as impartially as possible, not claiming, even for his favourite ancients, any thing like infallibility. A warm admirer of Grecian architecture, he is by no means so bigoted to it as not to be able to discern merit or beauty in any other style: on the contrary, he finds much to admire, not only in the various styles of pointed architecture, but in some others which are less generally known, and have been less extensively cultivated. His admiration, however, for the works of the Italian school is exceedingly limited; while, in regard to Palladio and his followers, he is not disposed to treat them much more courteously than he treats Vitruvius himself: neither could he very consistently have done so, since their principles, with regard to the orders at least, are mainly founded upon the doctrines of that writer. It must be admitted, indeed, that Mr. Hosking does not suffer himself to be imposed upon by great names; names which, to vulgar ears, sound as so many synonymes of excellence. Nor do I quarrel with him for this sturdy independence; because I myself entertain no very great reverence for many whom it is the custom to wonder at, and because I would set my face against all that learnt-by-rote admiration which has not even the merit of being sincere. Even Michael Angelo himself does not escape Mr. Hosking's lash; for he does not scruple to affirm that he had "a very bad taste in architecture," and that "to him may be attributed many of the bad qualities of the Italian style." Again, he says that "his principal works are all distinguished for their singular want of architectural beauty and propriety, in every particular."

With equal, and certainly not misplaced, severity does he express himself in regard to Palladio, whose taste is generally considered so unimpeachable, that some curiosity will be felt to know what defects our critic can detect in him. "Palladio," observes Mr. Hosking, "made greater use of insulated columns than the Italian architects generally; but his ordonnances are deficient in every quality that produces beauty: his porticoes may be Vitruvian, but they certainly are not classic. His columns upon columns, his attached and clustered columns, his stilted post-like columns, his broken entablatures, his numberless pilasters, straggling and unequal intercolumniations, inappropriate and inelegant ornaments, circular pediments, and the like, are blemishes too numerous and too great to be passed over, because of occasional elegance of proportion, or beauty of detail." Little flattering as it is, this picture is by no means overcharged, as might easily be shown had I room to enter into particular criticism. Even Robert Adam, whom no one will accuse of overweening predilection for classic authority, or of excessive rigorism in design, has spoken most contemptuously of the celebrated *Teatro Olimpico*; which, bad as it is, has at least the merit of being tolerably consistent in its puerilities and absurdities. That the sneaking cowardly affectation of would-be critics and admirers has contributed, in a great degree, to bolster up his reputation admits of little doubt; particularly when we find the so much cried up façade of the house he built for himself copied in Suffolk Street, without attracting notice for any beauty whatever. So far am I from wishing my readers to take me at my word, that I desire nothing better than they should attentively examine for themselves any collection of Palladio's designs. Or, should they happen to have Mr. Hosking's book, let them turn at once to the plate which exhibits the Villa Capra, generally allowed by the "great" architect's admirers to be one of the most elegant and most perfect of his productions. Without animadverting upon the

wretched meagreness of the order altogether, which it is impossible to recognise as Ionic, save by the voluted capitals, can any thing, I ask, be in more detestable taste than the two oval window-holes in the tympanum of the pediment, with the hideous armorial shield between them? Or can there be any more disgusting disproportion than that disproportion of character which prevails between the different features and apertures generally? Meanness and pretension go hand in hand throughout the whole.

ART. II. *Essay on the Metaphysics of Architecture.*

By J. Dowson, Esq.

EVERY one who has studied the nature of his own mind, or been accustomed to watch its operations, knows how great an influence external objects exercise over its powers, even when it is not particularly dwelling upon them. He knows how the objects before his view become insensibly associated with whatever thoughts may be passing through his mind, and produce, according to their nature or appearance, a degrading, an exalting, or a beautifying effect upon his ideas. Thus, in recalling the thoughts which have engaged him at some particular time, he also generally recalls the scenes or objects which were before him at that time; or, in recalling the scenes to his memory, he also recalls the thoughts that attended them, though no necessary connexion might have existed between them; and he finds that his thoughts have become ennobled and enlarged by their association with magnificent scenery, or that they have become degraded and contracted by association with inharmionious and mean scenery or objects. All this, I say, will be known and felt by him who has studied the nature, or watched the operation, of his own mind. But not only by him will it be felt, but, also, by all those who have minds that can enjoy the beauties of nature, or the charms of art. They find that their ideas become purified, raised, or expanded, according as they are surrounded with that which is beautiful, harmonious, or high. And he who unites with this sensibility a philosophic mind, will delight to surround himself with the beauties and sublimities of nature and of art: not that he may sit for hours to contemplate them, but that, by their association with, they may give to, his thoughts and imaginings a higher and purer character, and vigour to reach, and power to grasp, things of higher import, to expand his views of existence, of the wisdom and power of God, and of the mysteries of nature and of mind. And this power over us, belonging to external things, may be easily accounted for. We know that without ideas we could not think at all, for they are the materials for thought; and we know, also, that all ideas are, in the first instance, communicated to us through our senses: of course, I mean here, by ideas, only those which are of matter, and not those which arise from reflection upon our own feelings of existence and identity, and thence upon the nature and attributes of spirit; although these, however abstract they may be, will always associate themselves in our minds with ideas or images drawn from matter. Of the ideas which we receive through our senses, we may, indeed, form almost an infinite number of combinations, differing from every thing we may see around us; yet still they are only combinations whose beauty and elevation must depend wholly upon the quality of our materials, and our power to use them. Thus, then, must our minds continually be under the influence of external objects; the scenes around us becoming, as it were, the *pedestals* upon which our souls naturally exalt themselves to take a view of the things beyond; their view being, consequently, enlarged or diminished, according to the height which they thus ascend. Ideas may be called the atmosphere, as well as the food, of the soul; upon the quality and purity of which depend its vigour, and the loftiness of flight which it can take.

Seeing, then, that such is the effect of external objects upon our intellect,

it becomes a matter of great importance that we should so regulate the order and appearance of those things which are within our power, that they may produce a favourable influence. Of those things is architecture; an art which, in my opinion, is less understood, and worse practised, than any other; as our great cities, towns, and public buildings only too clearly prove: but of this anon.

Architecture, as an art, may be compared to music and poetry. Like them, it requires a vivid imagination, and an exquisite sensibility to the beautiful and sublime. Yet it is an art of far greater importance than either music, poetry, painting, or sculpture; for from all these we can escape, if the impressions which they cause be displeasing; but how shall we escape from the impressions received from architecture, unless we banish ourselves from society, and live only amongst the unassisted productions of nature?

Such, then, being the importance of architecture as art, it becomes pre-eminently desirable that architects, nay, indeed, that all persons possessing the least sensibility, should well understand those principles by the application of which beauty and sublimity may be produced in its works, not only in single buildings, but in whole streets — yea, cities — to such a degree, that the united effect of the structures may be harmony without monotony.

Architecture, in every gradation of style, may be classed under these four denominations: the Beautiful, the Sublime, the Grand, or the Magnificent.

Of the Beautiful in architecture, we draw our ideas from the works of the Great Architect of Nature, and from the tastes which He has given us. Yet there are four principles, Grace, Expression, Proportion, and Harmony, which are absolutely necessary to its perfection, and an infringement of them will invariably produce a harsh and revolting effect. But, as beauty in nature is infinite in variety of character, so in architecture it would be absurd in the highest degree, to attempt to establish rules or standards which should limit, to certain prescribed principles, the power of producing all that can be called beautiful in it. Yet, as far as the beautiful comes within the cognizance of our reason, we may affix rules which can never be departed from without destroying it. The attributes of Grace and Expression can hardly be said to come within these rules, but must be principally judged of as to their analogy with the forms of nature. By grace and expression, I mean those indefinable principles by which we form and arrange the various members of architecture, so as to charm the eye, in addition to the pleasure produced by proportion and harmony of parts; and without which all that would be produced by the latter would be dulness or monotony. These are what may be said to give to any style of architecture its peculiar character and expression, accordingly as they are applied; and I think they are more particularly analogous to grace and expression in the human form and countenance. The principles of Proportion and Harmony come more immediately within the cognizance of our reason, and may easily be decided upon. Proportion is that by which we regulate the size of the various members, with regard to each other, so as to produce symmetry in the whole. To illustrate the importance of this to the production of beauty in a whole, let us suppose a large column to be raised to support something very light and mean in comparison: how revolting this would be to our common sense! and let the grace and proportion of the column itself be ever so beautiful, yet all its effect would be lost in the ludicrous idea presented by its disproportion to the thing which it supported. Harmony in architecture is the agreement of the character of its various parts, and a unity of expression and purpose in the whole. To illustrate this, we have only to suppose a structure in which lightness and heaviness of expression, simplicity and intricacy of style, contend together in grotesque confusion; and we shall see at once what is meant by harmony, and how the want of it annuls all beauty.

Of the various styles of architecture, and of their various capabilities of beauty, it is impossible to say much in a short essay. The Gothic style is, in my opinion, capable of the highest degree of lightness of effect, and the

greatest intricacy and variety of beauty. Its multiplicity and variety of members and mouldings, and the weaving and intersection of its lines in vaultings, &c., being so analogous to the union of the foliage and branches of vistas of trees, give great scope to the fancy in producing variety and agreeableness of effect. Yet, in the generality of the exteriors of our Gothic structures, there is so much heaviness and confusion, that we seldom see any effect produced by them, saving that of grotesque piles, elaborate in the confusion of small carvings: and yet these are much admired by some persons; for which I can only account by supposing their admiration to arise from the association of such buildings with their ideas of the past times of their country, over which, however barbarous they were, romance has thrown a charm.

The Grecian style is capable of a much higher order of beauty than the Gothic. Its columns, the proportions of which are taken from those of the human form, are remarkable for their exquisite elegance and grace; and the members of its various orders, when properly applied, and their proportions properly observed, produce the most perfect symmetry and beauty. Yet it is not capable of much variety of beauty; and, when any attempt is made to make it elaborate, or intricate in effect, its beauty becomes in a great measure destroyed, as it is characterised chiefly by its graceful simplicity of form.

Of the Egyptian style I need not speak under the head of beauty, as its characteristic heaviness and monotony render it incapable of it to any very great degree. Neither is it necessary that I should speak of the other styles which are practised; for the characters of all, I believe, assimilate, in some degree, to one or other of those which I have already mentioned; and, if they do not, their qualifications for producing beauty must be judged of in the same manner.

Sublimity may be said to consist in the high and the awful. In architecture, vastness of design, with largeness of parts to correspond, will produce this effect. To illustrate this, let us imagine rocks piled upon rocks, as columns, to a great height; let us imagine whole arcades of supporting arches of like ponderosity; and the effect will be that of the sublime. Yet smallness of parts, in a structure of this kind, would destroy such an effect, let the structure itself be ever so large; and the explanation of this is simple: your eye receives only the effect of a multiplicity of small things; and, as littleness is the very antipodes to the sublime, the effect of the whole, as to its size, is destroyed.

We can easily see, from this description of the sublime, how far the styles of architecture already spoken of are capable of it.

The Gothic, from the smallness and multiplicity of its parts, is the least adapted for its production; for, however large a structure in that style may be, still must its members be small in comparison to the whole; although, in the depth of its shades, and the boldness and loftiness of its arches and groinings, it may be produced to a very high degree. The Grecian style is capable of it to any extent. Its proportions are such, that, let the scale upon which it is practised be small or large, to any extent, it will always appear only as a whole: here there is no complexity of lines, or profusion of ornament, to distract the eye. The columns are so simple, though fine, in their contour, and so proportioned in their distances from each other, and to the entablatures which they support; or, rather, their entablatures are so proportioned to them, and the various members of that entablature to itself; and the whole of any of its orders is so perfectly symmetrical; that, let it be enlarged to any extent, still must that order, with all its members, produce the effect of a whole; and, therefore, we conclude that it is capable of any height of sublimity. Even its columns themselves, independent of what they might support, would produce that effect, such is the nobleness of their form. Of the capabilities of Egyptian architecture for producing the sublime I scarcely need speak, as it will be seen at once, from what I have already said of it, that, although it is not capable of any very high degree of

the beautiful, yet it is, from the largeness of its parts, capable of the highest degree of sublimity.

Grandeur in architecture is produced by the union of the beautiful and the sublime. From this will be apprehended, at once, the various capabilities of the styles already mentioned to produce such effect. The Gothic is little capable of grandeur of effect, from its possessing in so small a degree the attributes of the sublime. The Grecian is capable of it in the highest degree, from being capable of the most exquisite beauty, and the highest sublimity; and the Egyptian is capable of it in a much less degree, from its comparative deficiency in the elements of beauty.

Magnificence is only a higher degree of grandeur; for, as grandeur is the union of beauty and sublimity, so is magnificence; only, to produce it, beauty must become more beautiful, must be highly enriched with appropriate ornament, must be luxuriant in grace, and possessed of the highest finish of execution.

Having now spoken, as briefly as I think consistent with a short essay on architecture, of the constituents of its beauty, sublimity, grandeur, and magnificence, and of the capabilities of various styles to produce these effects, it now remains to be shown how they are to be produced in whole streets and cities, to as perfect a degree as in single buildings: and this may be shown very briefly. It will be remembered, that, at the beginning of this essay, I gave it as my opinion, that architecture was an art less understood, and worse practised, than any other; and that I referred for corroboration to our great cities, towns, and public buildings. Of the last I shall now say nothing, as I think that what has been already stated, if properly applied, will show how far the generality of them fall short of what they ought to be. Neither is it necessary, after what I have before mentioned, that I should dilate on the particular buildings of our cities and towns; therefore, I shall proceed at once to speak of their streets. Here, in one street, we find the houses each in a different style; some high, some low, some projecting, some retreating. Every thing is in the "most admired disorder;" and the effect of the whole is confusion worse confused. It is true that there are some, yea, many, streets which produce a much more harmonious effect: some which, in comparison, may even be called beautiful. Yet, to balance this, there are others, and their number is very great in comparison with the rest, the effect of which is even worse than that which I have mentioned; and, if we take a more extended view of a city or town, we shall see nothing but confusion, and a total want of harmony and beauty. The effect of almost all is that of a mass of indifferent or ugly buildings, jumbled together in any way that chance might direct. But let us take a view of Rome, or of any of the cities of Greece, as they are exhibited to us in pictures, either in ruins, or with their grandeur restored. How magnificent do they seem! We feel elevated as though we listened to some sublime and harmonious music. And what is the cause of this effect? Not the touches of the artist who represents them; for it is felt even in representations which fall short of the reality; and representations of our own cities, even when set off by all the powers of the artist, will not produce such an effect. Then what is the cause of such difference? It is easily discovered. The buildings of Greece and Rome are all in one style, and, therefore, they harmonise with each other. That style possesses in itself all the attributes of the beautiful and sublime; and, therefore, when correctly practised, its whole effect is that of magnificence itself.

Yet some of our architects are continually employing the Grecian and Roman orders in their structures; and they copy most exactly their proportions as observed in the various temples. They can show you that what they have done is taken, to a nicety, from the Temple of Jupiter Stator, or Minerva Polias, or some other temple. Then why is it that we see not the effect produced by their works, that we see produced by those celebrated structures? A child might tell the cause, did he know the circumstances. They copy columns and their entablature to make a portico, which they will

place on the side, or the end, of a building with which it shall have little in common.

Thus, then, to render our streets beautiful, each building must not only be beautiful in itself, but must also harmonise with the rest; and in each street there must be but one style and one character. Thus, also, in a whole city or town, though various styles and orders may be used in its streets, yet they must all be so arranged as not to intrude upon one another, and cause confusion. It will be seen at once, that, if the Grecian style, pure and well applied, predominate in such a city or town, the general effect will be grand and magnificent; while, if Gothic predominate, the general effect can be little more than that of the mere beautiful and rich; or, if Egyptian, that of the ponderous and sublime.

I should appear very extravagant, were I to speak of pulling down our cities, and of rebuilding them according to these principles. Yet I am not afraid to say that the incalculable expense and labour which such a proceeding would require, would not be greater than the benefits which would accrue from it to our minds, in refining and exalting our ideas. Perhaps there are few who will coincide with me in such an opinion; but, however that may be, I shall conclude with expressing my hope that, before long, our ideas will become so refined, and our sensibilities so acute, with regard to architecture, that we shall not be content until we have none of its works around us but those that are either grand or beautiful.

ART. III. *On the successful Designs for the Houses of Parliament.*
By B.

At length the successful designs for the Houses of Parliament are placed in the National Gallery; and, if the public have felt disappointed at not seeing them at the opening of the exhibition, they will now, no doubt, feel still more disappointed when they see the extraordinary manner in which the three minor premiums have been awarded. In my last communication, I stated what I conceived to be the reason for there not being more competitors; at the same time, I suggested the possibility of this competition being conducted with impartiality. The result of the decision of the commissioners will answer for itself.

There can be very little doubt, I think, of the justness of the decision with regard to Mr. Barry's design. It possesses the characteristics of Gothic architecture, particularly in the interiors, and is, on the whole, a very grand design. If a fault can be found, perhaps the river front requires more variety in its general outline: for, it must be remembered, it will be a very extensive façade, and one that will become, after one general view, monotonous, and very unsatisfactory to the eye, from its extreme simplicity. I conceive that a large building, like a large picture, should develop its whole outline at once, from a certain distance; but a step closer, or a more minute examination, should rather increase than diminish the curiosity of the observer to examine the more subordinate parts. If the interest of the spectator in viewing a building is not kept up by a certain degree of variety and intricacy in its bolder parts, and every part is seen at one view, simplicity verges on monotony. A great quantity of elaborate tracery placed on a flat surface gives no variety, as it cannot produce large masses of light and shade; therefore a general composition cannot be dependent upon mere ornament for its beauty; and, perhaps, by dispensing with mere decoration, a better opportunity would be given for testing a design as a whole. Thus much I have thought it necessary to say with regard to the river front of Mr. Barry's design. The west front is infinitely better; but in the elevation a great deal more is shown than can possibly be seen in one view, which gives a grandeur to this elevation that it will not

possess when executed. Thus the Speaker's house, which is a considerable distance beyond Westminster Hall, and Westminster Hall, are shown to the same scale as the new fronts to the Law Courts, giving a view of the design which will never be obtained. The north and south fronts are very beautiful, particularly the south front, with the increased decoration of Westminster Hall, and its increased length. This front is more in harmony than the north; which, by the great decoration of the new parts, injures the effect of Westminster Hall. Of the interiors I need say very little; they are highly decorated, and a true spirit of Gothic architecture pervades the whole.

Mr. Buckler's design comes next agreeably to the arrangement of the commissioners; and it is distinguished by a buckle suspending the letter R. The commissioners report, "that the elevations are deserving of much commendation, although, from the number of projections and recesses, which give a broken character to the river front, it is much more difficult to judge what its effect would be when finished, than any of the drawings in plan 64. . . . These objections, joined to others more important, which relate to the ground plan," &c. From these observations of the commissioners, it may be presumed that they had no idea of a medium between extremely simple and extremely intricate; and that this design has been chosen because they have objections to both the plan and the elevations. There is a decided want of repose in this design, and the composition is altogether of a very ordinary description, many of the rejected designs being very far superior. I will merely refer to the sections of the two houses, which are mere barns. I think it decidedly inferior to Mr. Hamilton's, bad as that is.

Mr. Hamilton's design comes next: this is Elizabethan, or what is so termed; but it partakes more of the style which prevailed in the end of the reign of James I., and the beginning of the reign of Charles I. There are some good parts about this design, and the river front would look as well as this style would permit. The interior views of the houses are also good in their way; but the design of Mr. Rhind, hanging opposite, is certainly better, as are several other Elizabethan designs. The arrangement of the plan is certainly not the most convenient.

We come now to Mr. Railton's design, which the commissioners appear to have chosen because "it is inferior to none in attention to the instructions and specifications delivered to the competitors." This is the only reason the fourth premium has been awarded to Mr. Railton. It is a very confused production; and shows that the artist possesses very little knowledge of Gothic architecture, which the interior views of the houses very clearly show.

Leaving Mr. Barry's design out of the question, it is impossible to conceive what could have induced the commissioners to select the designs of Buckler, Hamilton, and Railton, when there are so many in the exhibition so far superior to them, both in point of general arrangement of the plans, and knowledge of Gothic architecture in the elevations; and yet the commissioners could not find another design deserving of the fifth premium! What is their excuse? "We have found the merits of several so nearly balanced, that, unable to give a preference, we feel ourselves called upon, in justice to the parties, to abstain from any further recommendations." So ends this grand competition, that was to be decided by the most skilful *amateurs*, in the most impartial manner, so as to reflect honour on the commissioners for their ability in deciding upon the merits of an art which requires the utmost perseverance and patience, and greatest portion of the lives of its professors, to obtain a knowledge of it. So ends all confidence in public competition. But architecture will rise, in spite of this most extraordinary decision. A time must soon arrive when amateurs will not be called upon to decide upon an art so intricate; and, if an opportunity occurs again for a public competition of consequence, a public exhibition will take place before the designs are decided upon.

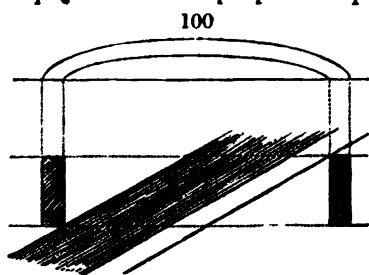
London, May 7. 1836.

ART. IV. *On the Construction of Skew Arches.* By CHARLES FOX, Esq.

The following essay is that referred to in p. 239., as having been read at a meeting of the Institute of British Architects in March last, and published in the *Philosophical Magazine* for April. We applied to Mr. Fox, and to the proprietors of the *Phil. Mag.*, for permission to publish it here, conceiving the subject, at the present time, when so many railroads are going forward, to be of very great importance. Our request was kindly and liberally acceded to at once, both by Mr. Fox and the other parties concerned.

SKew bridges have hitherto been comparatively little used; but, since railways have been introduced, in which it is highly important to preserve as direct and straight a line as possible, they are very frequently required, as a railway passes through the various districts without the possibility of regarding the angle at which it may cross canals and roads, its course being, in great measure, controlled by the natural features of the country.

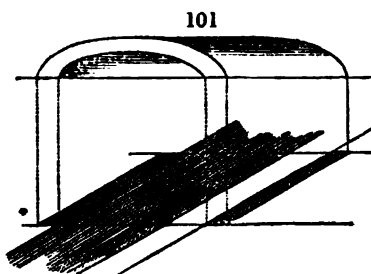
Wherever a canal is thus crossed at an angle, we must either divert the canal, so as to bring it at right angles to the railway; or we must build a common square bridge of sufficient span to allow the canal, its course being unaltered, to pass uninterruptedly under it; or we must erect a proper skew bridge. The first of these is often impracticable, as provisions are generally inserted in the acts of parliament for preserving the canal from any alteration in its course; and, even if this were not the case, the diversion of the canal causes great expense, and is attended with much inconvenience to its traffic: the second is a most unscientific mode of overcoming the difficulty, and would also involve very serious expense, arising from the necessity of making use of an arch of much large dimensions than would be required were the proper oblique arch erected in its stead. By



referring to *figs. 100. and 101.*, this will be apparent: for this diagram I have selected the angle at which the London and Birmingham Railway crosses the Grand Junction Canal, being an angle of 30° . It is for the above reasons that oblique arches are now so frequently erected; and a good method

of building them is, therefore, of considerable importance.

As many practical men with whom I am acquainted have experienced considerable difficulty in the construction of skew



bridges, I was led to turn my attention to the subject; and have, at length, succeeded in rendering the principles of it easy to be understood.

All persons are acquainted with the manner in which common square arches are built, where all the courses are square to the face, and parallel

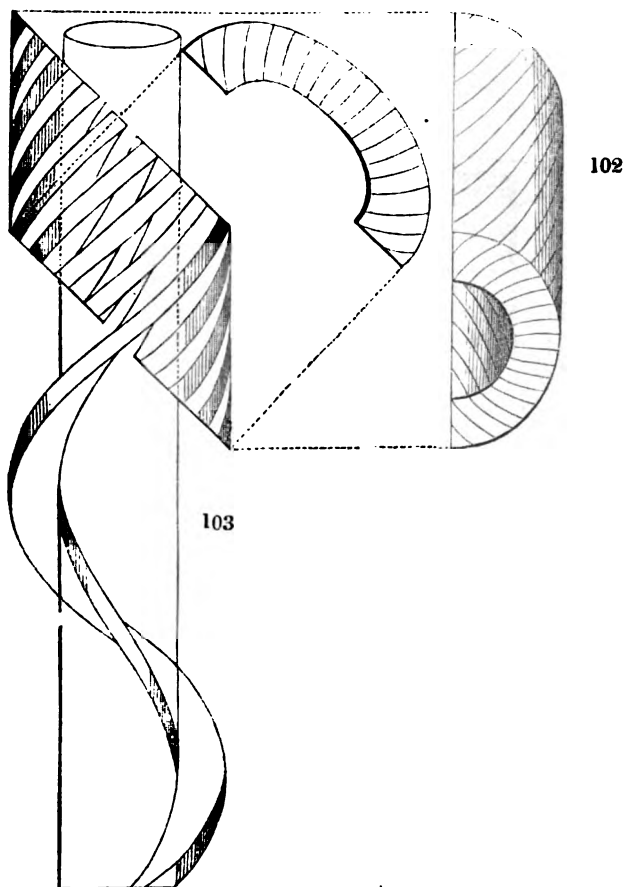
both to the direction and surface of the road or river running under it, by which means the thrust, or strain, is always at right angles to the joints, or beds, of the individual stones composing the arch; hence the whole thrust of ordinary arches, which is brought in upon the abutments, is exerted in the direction of the bridge itself, that is, of the road passing over it.

To devise some simple mode of setting out and working the courses of stone in a skew arch, so as to bring in the thrust in the proper direction, was the great object to be obtained. All practical men are aware of the vast difference between having to deal with straight and with twisted lines; and the necessity of introducing twisted lines in the construction of skew bridges will soon be seen.

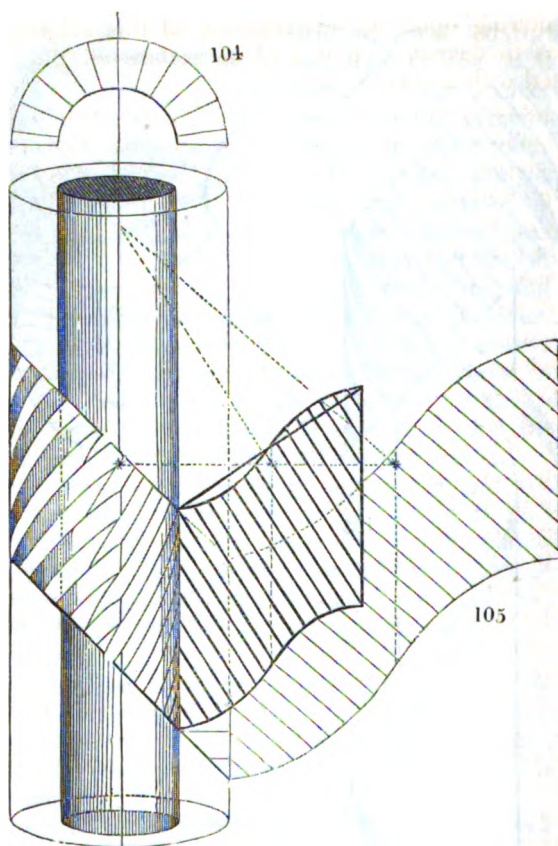
In skew bridges, in order to keep the thrust in the proper direction, it is necessary to place the courses of stones at an angle with the abutment, whereby each stone loses its parallelism with the surface of the road, and is, therefore, laid on an inclining bed.

In a common semicircular arch, each course of stones is parallel with the axis of the bridge, and all the beds are wrought so as to point to the axis: the inclination of the stones varies in every course; but, although the inclination of the stones varies in every course, both ends of the course have the same inclination, both ends are equally high in the arch, and both ends point to the centre. This is the case in the ordinary bridge; but in a skew bridge, as the courses run obliquely across the arch, one end of the course is necessarily higher up the arch than the other, and, therefore, would no longer point to the centre; but only *make this point to the centre*, and we immediately get the twisted form; that is, we make each bed of the courses of stones a true spiral plane.

The principle which I have adopted is, to work the stones in the form of a spiral quadrilateral solid, wrapped round a cylinder, or, in plainer language, the principle of a square-threaded screw: hence it becomes quite evident, that the transverse sections of all these spiral stones are the same throughout the whole arch. It will be obvious, that the beds of the stones



should be worked into true spiral planes ; but I am not aware that any rule has yet been published that would enable the stones to be wrought at the quarry into the desired form, or of any rule by which the true angle at which the courses cross the axis of the bridge is determined. *Fig. 103.* is a representation of the courses of the stones, each alternate course being omitted in order to show their form more distinctly; and the course forming the key-stone is carried out so as to show that it really is the thread of a square-threaded screw wound round a cylinder, the cylinder being indicated by the two dotted lines. If the threads are cut at right angles to the cylinder, the section would appear as in *fig. 104*; if cut at right angles to the courses, or as nearly so as the case will admit of, as they are really cut to form the face of the bridge, the section would appear as in *fig. 102*.



In order that these principles may be understood, it is necessary to have a clear idea of the nature of a spiral plane; and, perhaps, the best definition of it is, to consider it as being produced by the twofold motion of the radius of a cylinder; that is, let a radius revolve upon its axis at a uniform velocity, and at the same time impart to it a progressive motion along the axis itself; and then, by apportioning these two motions to the particular case, you will obtain any spiral you may desire: hence it is apparent, that the outer edge of a spiral plane is produced by a straight line wound round a cylinder, every where forming the same angle with the axis; while the inner edge actually merges into the axis itself, which, of course, is a straight line. The question which now naturally suggests itself is, how to decide at what angle to place these spiral stones with respect to the axis of the bridge, or, in mechanical language, what traverse must we give the screw?

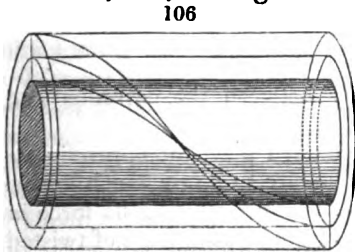
In entering upon the investigation of this subject, my first idea was to develop upon a plane surface all the superficies connected with a skew arch.

If a semi-cylinder be cut obliquely, the section is a semi-ellipsis; and if the semi-cylinder be then unfolded, the edge of the developed ellipsis will not be a straight line, but a spiral one; and some builders, not being aware of this fact, have squared a course from the face of the centring; and, having drawn in the remaining courses parallel with this, have taken it for granted that all the courses would be square with the face, which, it will be seen, is impossible by referring to the development of the intrados, or under surface of the arch, which is the developement of the centring itself: they have hereby been led into very serious and perplexing difficulties.

Having shown the impossibility of making *all* the stones square to the face, I will now give the mode of deciding in what direction they should be placed. When the soffit is developed, the edge which formed the face of the arch gives a true spiral line: my first plan was to lay the courses of stone at right angles to a line extending between the two extreme points of the spiral line of the developed soffit (see *fig. 105.*). This line I shall afterwards speak of as the approximate line, as it is the nearest approximation to the line of the face that can be obtained by a straight line.

On further consideration, I discovered a far more eligible mode of laying out the lines.

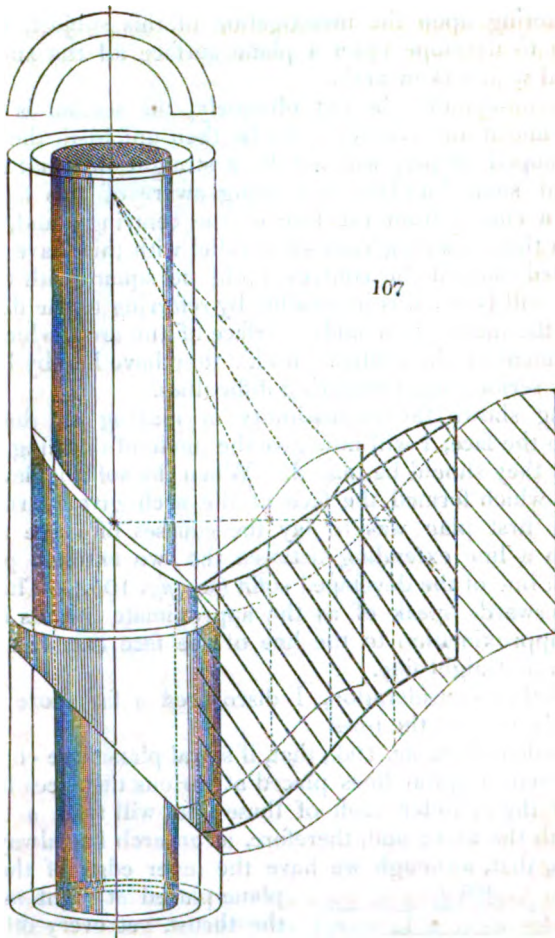
It is evident, from *fig. 106.*, that, if spiral planes are considered as composed of spiral lines placed at various distances from the centre of the cylinder, each of these lines will form a different angle with the axis; and, therefore, as an arch has always some thickness, that, although we have the inner edge of the spiral



plane placed at right angles to the thrust, yet every other portion is gradually departing from a right angle, and is, therefore, exerting its force in an improper direction: thus an arch of this description can never exert its thrust in the direction of the bridge, but is endeavouring to

push the abutments obliquely.

To get the thrust strictly correct, I have supposed the arch to be cut into two rings of equal thickness (see *fig. 107.*); and, having considered the external ring as removed, have proceeded to develop the outside surface of the remaining one: this I shall hereafter speak of as the intermediate developement, as it is the



developement of a surface midway between the extrados and soffit or intrados.

Upon this intermediate developement I place the approximate line, and then draw all the courses square to it; by which means we obtain a line in the *centre* of each stone exerting its force in the true direction, and thus get rid of the disadvantage of twisted beds to the stones; as in proportion as the one half of this bed exerts its force in an oblique direction on the one hand, the other half acts in the opposite direction, and is, therefore, always producing a balance of effect, which resolves the various forces into one exerting all its power in the true direction, which is the object to be obtained.

Having explained the mode of setting out the beds of the

stones, a little may now be said on the situation of the cross joints: by these will be understood the joints between the various stones constituting a complete course.

Where an arch is built of stone throughout, the situation of these joints is of minor importance; but, where stone is expensive, it is common to make the faces of the arch only of stone, filling in the intermediate space with brickwork; as in these instances the cross joints form the boundary between stone and brickwork, it becomes a point of considerable importance. This is the case in the Watford viaduct: each stone, here, is equal in thickness to five courses of bricks, so that there are five thicknesses of mortar in the brickwork to one in the stone. Mortar always is compressed into a smaller compass when the centring is struck, and the full weight of the arch comes upon it. In consequence of this tendency, that portion of arches constructed of brickwork always subsides much more than the stone. In an arch where stone and brickwork are combined, little reliance should be placed on their connexion, as this is always more or less disturbed after the centring is removed; so that we should endeavour to construct each portion of the arch with its bearing surfaces, or beds, as nearly equal as possible.

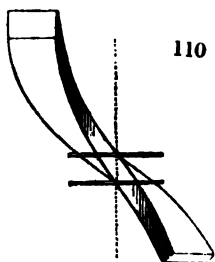
In the first models, the soffits of all the stones were made of an equal length, considering that this would present the best appearance; but this method rendered the bearing surfaces very unequal, as will be seen by *fig. 108*; the equal lengths being indicated by the dotted lines.

This difficulty is overcome by this simple means: instead of having the stones of equal length on the soffit, they are made so on the intermediate development; and then the areas of the bearing surfaces, or beds, of the stones are all equal (see *fig. 109*).

Having given the mode of laying out the lines, I will now proceed to the practical part, viz. the working of the individual stones.

My first idea was to commence by working the soffit; and this was the mode employed: —

Having obtained an elastic mould cut to the angle at which the joints of the soffit cross the axis of the bridge, the workman, by means of this, gets an oblique line on that surface of the stone which he intends for the soffit. It will be understood from *fig. 110*., that this oblique line thus obtained will be parallel with the axis of the bridge. The workman then proceeds to chisel out a groove (or what is by masons called a chisel-draught) along this line, of sufficient depth for what he knows will be required for the hollowing of the stone.



110

He then takes two wooden moulds (one of which is shown in *fig. 111*), which are portions of the same circle as the soffit itself. A mark being placed upon the centre of each of these moulds, the workman then proceeds to sink them into the stones at right angles to this chisel-draught (see *fig. 110*), and in such a manner that the centre marks shall be in the chisel-draught, and the upper edges of



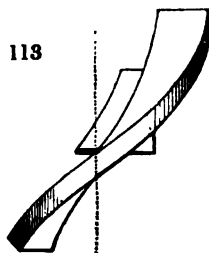
111

the moulds, which are straight, shall be in the same plane, or what is commonly called out of winding. It will now be obvious, that these two last grooves will form true portions of the soffit itself, and, therefore, that the workman has nothing to do but to work out the remainder of the stone with a straight-edge, always kept parallel with the first draught, and sunk to the bottom of the two draughts which were worked by the curved moulds. Having obtained this hollowed surface, an elastic mould, of the exact size of the soffit of each stone, is pressed into it, by which the stone being marked, we obtain all the lines of the soffit itself.

112

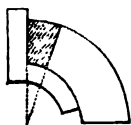


It will now be quite evident, that the beds may be obtained by making use of a square, one limb of which shall be made to the curvature of the soffit, and the other the radius of this curve; always taking care that this square is kept at right angles to the axis, as will be seen in *figs. 112, 113, and 114*.



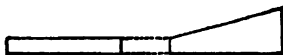
113

114



The first few stones were wrought in this manner; but, finding it very difficult to prevent the workman from getting his soffit a little on one side, by which means he wasted much of the stone on one bed, and rendered the other deficient, I had recourse to a method which I will describe. Having provided two straight edges, the one parallel, and the other containing the angle of the twist (see *fig. 115*), we proceeded to work one of the beds by chiseling two draughts along the stone; so that these straight edges, being kept at a proper distance from each other, were let into the stone until they were out of winding on their upper edges.

115



Having finished one bed by straight edges, we then obtained the soffits and other beds by means of the square before mentioned. By working a bed first instead of the soffit, the best will always be made of a block of stone.

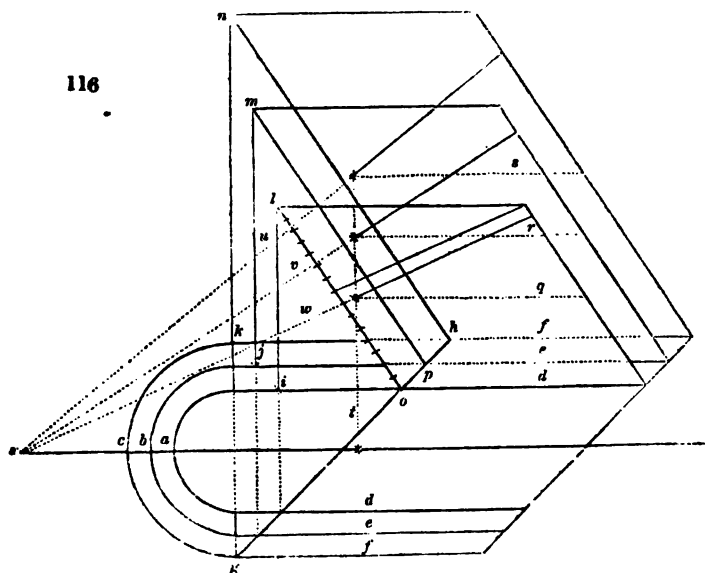
As we have before seen that all the stones constituting a skew

arch are portions of the same square-threaded screw, the workman, having finished one stone, has only to repeat the same operations with every other.

Any stone in the face of the arch, taken from one side, and applied to the corresponding one face to face, will continue the true spiral plane: this fact enabled us to work all the stones for one bridge in pairs; that is, one stone having been wrought with the proper twist, and of sufficient length to make two stones, was accordingly sawn in two at the proper angle: but, of course, this cannot be done advantageously when the stone is of a very hard nature.

It has been shown, that, by developing all the various surfaces, instead of having to think of complicated spiral lines, they are at once reduced to straight ones; and I will now very briefly show how simply the data necessary for the construction of a skew arch may be obtained (see *fig. 116.*).

Let a represent the curvature of the intrados, and c the extrados, b being a line midway between a and c . Let $d d$, $e e$, $f f$, represent the boundaries of three cylinders, of which a , b , c



are the transverse sections; let these cylinders be cut by the straight line $g h$, at the angle of skew, that is, the angle formed by the two roads crossing each other; and from the points i, j, k draw three straight lines at right angles to the axis, and of such lengths that $i l$ shall be of equal length to the semicircle a , and $j m$ equal to b , and $k n$ equal to c ; from the

point o draw the straight line $o l$, and also from p to m : it will be seen that $o l$ is the approximate line of the developed soffit, and $p m$ that of the immediate developement. Add q , r , and s , which are the centre lines of the three developements.

It will be seen, that, when these developements are placed as in an arch, these three lines, q , r , s , being parallel with the axis, will be in a plane perpendicular to the axis, and, therefore, that all the points in each spiral will be vertical with the axis, and also with one another.

Through any point in $p m$ draw a straight line (v) at right angles with $p m$, which straight line shall extend to the axis of the cylinder.

At the point where it intersects r , a line (t) perpendicular to the axis intersects r also: this last perpendicular line cuts the three lines q , r , s at the points where the lines u , v , w , which meet in x , intersect q , r , s .

The joints are then drawn upon the three developements parallel with the lines u , v , w , and at such distances, that the lines q , r , s shall be cut into equal parts. Of course, care must be taken to divide the approximate line of the soffit into a given number of stones. The angle x will be that which the intrados form with the axis of the cylinder, and the angle $u w$ will give the wind of the bed. On this principle, and by the rules here given, it is nearly as easy to work the stones of a skew bridge as those of any other.

ART. V. *A Series of official Documents relating to the Competition Designs for the new Houses of Parliament; including the "Report of the Commissioners," and the "First and Second Reports of the Select Committee."*

[THE great interest which continues to be taken in the designs for the new Houses of Parliament, and the wishes of several of our readers, have induced us to determine on reprinting in this Magazine the principal public documents respecting these designs; but, in order that our doing so may intrude as little as possible on the miscellaneous contents of the Magazine, we have employed a smaller type.]

1. *Report from the Commissioners appointed by his Majesty to examine and report upon the Plans which might be offered by the Competitors for rebuilding the Houses of Parliament.*

To the King's most excellent Majesty. Your Majesty having been graciously pleased, upon an address from the Lords Spiritual and Temporal in Parliament assembled, to issue a commission under the great seal, bearing date at Westminster, the 17th of July, in the sixth year of Your Majesty's reign, authorising and directing any three or more of the commissioners therein named to examine and report upon the plans which might be offered by the competitors for the rebuilding of the two Houses of Parliament, and to select and classify such of the plans, being not less than three, or more than

five, in number, as shall seem to them most worthy of attention; and to state, if required, the grounds upon which such selection and classification are founded; and to make their report on or before the 20th day of January, 1836;

We, Your Majesty's commissioners, who have hereto set our hands and seals, humbly submit to Your Majesty, that, from the hour we entered upon our duties, we used every possible exertion to complete our examination within the period limited by the commission; the conviction, however, of our inability to effect this object, and do justice to the competitors by giving as full a consideration to the designs submitted to us as their number and importance required, induced us to pray Your Majesty to extend the time for making our report.

Your Majesty having been graciously pleased to accede to our request, we are now enabled, with more confidence, humbly to lay before you the result of our deliberations on the merits of the 97 designs, containing from 1000 to 1200 drawings, which have been submitted to us from the Office of Woods and Forests. In performing this duty, we trust we may be allowed to express the satisfaction we feel in being able to report to Your Majesty the good effects which, in our opinion, have resulted from the competition; since, notwithstanding the limited period to which the architects were confined to send in their designs for a structure so unusually complicated, extensive, and important, they have, in the execution of their undertaking, evinced zeal and ability sufficient to justify the expectation that the art will be substantially benefited.

Restricted as the competitors were with respect to time, it would have been unreasonable to have expected drawings altogether more elaborate and correct; nevertheless, we are bound in justice to them to state, that, in their memoranda accompanying their designs, several have expressed their regret that they were prevented by that circumstance from making such alterations as from time to time suggested themselves in the progress of their work. Although we consider it unnecessary to trouble Your Majesty with a detail of the rules we laid down to guide us in our selection, still it may be proper to observe, with respect to the two Houses of Parliament themselves, that, with the imperfect knowledge we profess on the theories of sound and artificial ventilation, we deemed ourselves scarcely authorised to allow those subjects to have weight in determining our preference; we therefore confined ourselves to the consideration of the beauty and grandeur of the general design, to its practicability, to the skill shown in the various arrangements of the building, and the accommodation afforded, to the attention paid to the instructions delivered, as well as to the equal distribution of light and air through every part of the structure.

We now proceed to certify to Your Majesty, that, after long, minute, and repeated examinations and comparisons of the several designs submitted to us by the Office of Woods and Forests, although a difference of opinion may exist between us respecting the ground plans, separately considered, we are all unanimous in our opinion, that the one delivered to us marked 64. [Mr. Barry's design], with the emblem of a porte-cul, bears throughout such evident marks of genius and superiority of talent as fully to entitle it to the preference we have given it in our classification; and we have no hesitation in giving it as our opinion, that the elevations are of an order so superior, and display so much taste and knowledge of Gothic architecture, as to leave no doubt whatever in our minds of the author's ability to carry into effect Your Majesty's commands, should you be pleased to honour him with your confidence.

The next design we beg to offer for Your Majesty's consideration is that marked No. 14. [Mr. Buckler's design], and distinguished by the artist with the letter R., the elevations of which are deserving of much commendation, although, from the number of projections and recesses, which give a broken character to all the river front, it is much more difficult to judge what its effect will be when finished, than of any of the drawings in Plan 64., on which

we have just given our opinion: these objections, joined to others more important, which relate to the ground plan, have induced us to hesitate in the preference we should give to this or the design immediately following it in our classification.

In thus passing our judgment on the merits of No. 14., we have in some measure anticipated our opinion of those of its rival, No. 13. [Mr. Hamilton's design], bearing the motto of "King, Lords, and Commons;" but we must not omit to observe, in justification of the order in which we have placed them, that the architect of No. 13. had not to contend with the difficulty that, to a certain extent, presents itself in the preservation of the cloisters and crypt, and the restoration of St. Stephen's chapel.

We think it right, also, to remark to Your Majesty, as it may be an objection to the plan, that, being aware of the difference of opinion that exists as to the date which affixes the limits to the style termed Elizabethan, even amongst the profession, we determined to give it the greatest latitude of which it can possibly admit; and, considering No. 13. as possessing sufficient of the characteristics of the style, we have not hesitated, on account of this difference of opinion, to select it for a premium.

The last design to which we would pray Your Majesty's attention is No. 42. [Mr. Railton's design], bearing the device of the winged orb, which, if, as a composition, it ranks not in our opinion equally high with those we have already classified, is inferior to none in attention to the instructions and specifications delivered to the competitors, and to the general arrangement and accommodation required. Although Your Majesty has empowered us to select and classify plans to the number of five, we have found the merits of several so nearly balanced, that, unable to give a preference, we feel ourselves called upon, in justice to the parties, to abstain from any further recommendations. We cannot close our report without observing to Your Majesty, that we have not suffered our feelings to be biassed in the selection we have made by giving preference to a plan on account of its preserving those venerable and beautiful remains of antiquity, the cloisters and the crypt of St. Stephen's Chapel; we feel, nevertheless, assured that their existence need not interfere with the various arrangements requisite for such a building; and, if we had ever entertained a doubt on the subject, the plans which have been submitted would have completely removed it.

We have now, to the best of our ability, performed the duty imposed upon us by Your Majesty; we have pointed out the plan which, in our judgment, is most entitled to Your Majesty's gracious approbation: it is obvious that, previous to its being executed, it requires to be revised and corrected; but we feel confident that, had we thought it expedient to have communicated with the architect, as we were empowered to do by the commission, and pointed out such parts of the arrangement as appeared to us objectionable, he would have felt no difficulty whatever in removing them, and in rendering the plan not only free from any solid objection, but one the execution of which will throw lustre on the era in which it is built. We beg leave respectfully to add, that it is impossible to examine the minute drawings for this design, and not feel confidence in the author's skill in Gothic architecture: still, as the beauty of this style depends upon the attention to detail, for which the architect has no rule to guide him, but must trust to his practical knowledge and good taste, we humbly, yet strongly, recommend to Your Majesty that his drawings shall be submitted, from time to time, to competent judges of their effect, lest, from over confidence, negligence, or inattention in the execution of the work, we fail to obtain that result to which our just expectations have been raised.

We are, however, far from thinking it advisable, should the plan, when revised and perfected, be finally approved of by Your Majesty, that it shall be subject to any alteration that may have the effect of changing its character, or of impairing its unity of design.

We are aware that we are not called upon, in selecting and classifying the

plans for Your Majesty's approbation, to make the cost of any design an object of our consideration; and we fully agree in the prudence of having abstained from requiring the competitors to furnish estimates, which would have been productive of no public advantage, whilst the trouble and expense attending them would have been a considerable bar to competition.

It is not to be supposed, however, but that this subject would occasionally intrude itself on our thoughts in the course of our examination; and we humbly submit our opinion, that, in the event of any design meeting Your Majesty's approbation, a specification should be demanded of the architect of the style in which he intends to finish the interior, and the particular parts requiring, in his opinion, extra decoration, previous to his being called upon for any estimate: this remark suggests itself to us from the profuse and unnecessary ornament introduced by many of the competitors, merely, perhaps, to beautify their designs, but which would, if executed, be a wasteful expenditure of public money. We are conscious that, in the plan we have selected for Your Majesty's approbation, the enriched appearance of the several elevations will naturally excite suspicion that it cannot be carried into effect but at an enormous expense. In the absence of the detail of any portion of the work, we can form no perfect idea of the architect's intentions; but, even with the minute drawings before us, we have sufficient evidence to lead us to the belief that, from the unbroken character and general uniformity of the different fronts, and external decoration being wholly unnecessary in any of the courts, no design worthy of the country, of equal magnitude, can offer greater facilities for economy in the execution.

In the humble hope that Your Majesty will deign to approve our earnest endeavours to fulfil your commands to the best of our ability, we submit this our report to Your Majesty's gracious consideration.

CHAS. HANBURY TRACY.	(L. S.)
EDWD. CUST.	(L. S.)
THOS. LIDDELL.	(L. S.)
GEORGE VIVIAN.	(L. S.)

Approved of by His Majesty, and presented to both Houses of Parliament by His Majesty's command.

February 29. 1836.

DUNCANNON.

2. *Report from the Select Committee on the Rebuilding of the Houses of Parliament.*

By the Lords Committees [who were] appointed a select committee to consider of the report from the commissioners appointed by His Majesty to examine and report upon the plans which might be offered by the competitors for rebuilding the Houses of Parliament; and to report thereupon to the House.

Ordered to report, That the committee have met, and considered the report so referred to them; and have inspected the four plans mentioned in the said report, and marked respectively No. 64. 14. 13. and 42.; and have come to the following resolutions; viz.:—

Resolved,—1. That the committee, while they acknowledge great merit in all the plans laid before them, concur in the opinion of the commissioners, as expressed by them in their report to His Majesty, in giving a preference to the plan marked No. 64.

Resolved,—2. That it is the opinion of this committee, that the plan No. 64. ought to be so far adopted as to be made the basis of immediate further enquiries in respect to the cost of the plan, and to the best mode of carrying it into execution, and to any variations consistent with its general character and object, which may be found expedient.

Resolved,—3. That it is the opinion of this committee, that an humble address should be presented to His Majesty, to request that His Majesty will be graciously pleased to order that the further enquiries mentioned

in the preceding resolution be made forthwith, under the superintendence of the Commissioners of His Majesty's Woods and Forests, assisted by such authorities as they shall think fit to consult for the occasion.

That the committee having examined Mr. Barry, the architect who prepared the plan No. 64., have annexed that gentleman's examination, as it contains a statement of the principles on which that plan has been founded.

APPENDIX. Minutes of Evidence taken before the Select Committee of the House of Lords on the Rebuilding of the Houses of Parliament.

Die Martis, 8^o Martii 1836. The Lord President in the chair. *Charles Barry, Esq.*, is called in, and examined as follows:—The committee understand that you have prepared a statement of the principles by which you have been governed in preparing the plans now under the consideration of the committee? I have.—Have you that statement with you? I have.—Will you deliver it in? The witness delivers in the statement, which is read, and is as follows:—

Principles by which Mr. Barry has been governed in making his Design for the new Houses of Parliament.

Style. That of the styles proposed, Gothic or Elizabethan, the former of the Tudor period is preferable, as being homogeneous, well defined, and in harmony with the existing ancient buildings proposed to be preserved; whereas the latter is only an incongruous mixture of two styles in their decline, thus being utterly unworthy of the character of a great national edifice as a work of art, besides being at variance with the character of the existing buildings.

Ancient Buildings. That the hall, the crypt of St. Stephen's Chapel, and the cloister and chapels attached to the late Speaker's residence be preserved, and converted to useful purposes, and that St. Stephen's Chapel be rebuilt.

Position of proposed Building. That the building be set forward to the east into the river, in order to obtain an enlargement of the two Palace-Yards, and thereby make them spacious quadrangles; and that the line of iron frontage be made, as nearly as possible, at right angles with Westminster Bridge; which, it will be seen by a reference to the official plan of the site, is but effected by a line drawn directly from the extremities of the frontage.

Entrances. That the entrance to the Commons, and the principal public entrance to both Houses, be in New Palace Yard; and that the King's and Peers' entrances to the House of Lords be in Old Palace Yard, in order that a material portion of the great influx of people attending the Houses may be arrested at the nearest point, namely, New Palace Yard, and that the entrance into Old Palace Yard may be freed from unnecessary obstruction.

Public Access. That, for the greater convenience of approach for the public generally, entrances be made at the south end of Westminster Hall, from Old Palace Yard, and at the old entrance of the House of Commons, opposite Henry VII's chapel.

River Entrances and Terrace. That private entrances to the Houses be made from the river; and a private terrace provided for the recreation of members of both Houses.

External Approach. That, in order to widen as much as possible the entrance into Old Palace Yard, the footpath, which is at present in front of the Italian building containing the Law Courts, be placed in a cloister within such building; which will not only allow the whole width between its south-western angle and the Abbey to be given up to a carriage road, but also provide a covered walk from Old Palace Yard to New Palace Yard, which, it is presumed, will be found of great convenience for alighting from, and entering into, carriages, and advantageous as a sheltered walk for persons having to wait in the neighbourhood of the Houses.

Enclosing East End of New Palace Yard. That the east end of New Palace Yard be closed by the river front, in order to shut out from West-

minster Bridge an unfavourable view of Westminster Hall, the Abbey, &c., produced by viewing them so much above their ground level; also, for preventing cold draughts of air from the river, which would render the quadrangle an unfit place for horses to be kept in waiting; also for shutting out an unsightly view of the bridge, as seen from Parliament Square, and the quadrangle itself; and, lastly, in order to avoid the necessity of occupying the property on the east side of Abingdon Street, the fee simple of which, alone, would not be of less cost than from 70,000*l.* to 80,000*l.*

Elevation and Character of River Front. That the river front be lofty, and as little broken as may be desirable, to avoid monotony; that the lower, or ground, story and terrace be as simple and solid as possible, in order to accord with the plainness of the bridge, and form a bold base to the building; and that the superstructure only be of a decorative character, so that the building may present a lofty, imposing, and ornate appearance when viewed from Westminster Bridge.

Architectural Composition. That all the entire mass of building forming the Houses and adjuncts be treated, in its architectural composition, as a single edifice, for the sake of unity, public character, and effect; and that towers be placed at the extreme ends of the proposed mass of building, in order that it may group with the Abbey, &c., and have an imposing effect when viewed with that building. That the details of the river front be large, and those of the other fronts small; as the former can only be viewed from a distance, whereas the latter will be subject to a much closer inspection.

Palace Yard Fronts. That the fronts towards New and Old Palace Yards, and Parliament Square, be kept as low as is compatible with the height of the river front, in order not to reduce the importance of Westminster Hall, which must necessarily be a very essential feature of the proposed mass of building, when viewed from the two Palace Yards.

Approaches generally. That the several internal approaches for the king, the lords, the commons, and the public, be distinct from each other, and easy of communication when desired.

King's Entrance. That the state entrance for the king be from the south-eastern angle of Old Palace Yard, through a tower, proposed to be of sufficient size to receive the state carriage, which is intended to set down at the foot of a flight of steps of considerable width, leading to a landing hall and gallery, communicating with the king's robing-room at the back of the throne end of the House of Lords. The upper part of the tower to be appropriated to records.

Peers' Entrance. That the private entrance for peers be direct from Old Palace Yard, by means of a flight of steps communicating with a large private lobby, affording access to the House, either at the throne or bar ends; and that a distinct approach be provided for the bishops, from a quadrangle east of the House, to their dressing-rooms, and thence into the House, at the throne end, on the opposite side to the entrance for the lay peers. That a water entrance be also provided, to communicate directly with the lobbies and corridors adjoining the House.

Commons' Entrance. That the private entrance for the members of the House of Commons be direct from New Palace Yard, by a flight of steps communicating with a private lobby at the bar end of the House; and that a water entrance be also provided for their accommodation, communicating with the private lobby alluded to, and the corridors adjoining the House.

Public Entrance. That Westminster Hall be the lobby, in common, between the Courts of Law and the Houses of Parliament, and also the grand public approach to the latter; and that for the last-mentioned purpose, as well as to carry on a dignified character of design in such approach, on a scale suitable to the character of the Hall itself, a handsome porch, with a flight of steps, be added at the south end of the Hall, with an opening into it of the rise of the present window when cut down to the level of the porch floor. That from such porch the approach be continued through St. Ste-

phen's Chapel (proposed to be rebuilt, and called St. Stephen's Hall), into a central lobby of great size, lighted by an octagonal lantern midway between the two Houses, and in immediate connexion with the public lobbies attached to each; that from such central lobby the public approach be direct, by means of a flight of steps of considerable width, to the committee-rooms in the river front; and that other committee-rooms be provided on the principal floor, with public access to them from St. Stephen's Hall, by which the private accommodation for members of the two Houses may not be interfered with. The porch proposed at the south end of Westminster Hall will present a feature of great interest in the view of the interior, and cause that splendid room to appear only as a part of a great whole, instead of being, as hitherto, an apparently isolated room, without being any other than as a lobby for counsel and persons in attendance on the Courts of Law.

Light and Ventilation of Houses and Committee-Rooms, and Level of principal Floor. That, in consequence of the great height of the Hall, and the level of high-water mark, neither the Houses, nor any of the committee-rooms, be upon the level of the ground story; but that, for the sake of height, good light, freedom from damp, and ventilation, they be placed on the principal floor, which is proposed to be made to accord with the level of the old floor of St. Stephen's Chapel.

Appropriation of Ground Story. That the ground story be wholly appropriated to record-rooms, public and private approaches, kitchen offices for the several residences which form part of the edifice, kitchen courts, and quadrangles of approach, cellarage under the Houses for warming and ventilating, &c.; and for many other useful purposes, such as store-rooms, clerk of works offices, workshops, &c. Perhaps it might be desirable to have, also, in this story, a public coffee-house, for the use of the bar and persons attending the Courts of Law and Houses of Parliament.

Position of Houses. That the situation of the Houses be in the centre of the mass of the proposed building, for the sake of convenience, quietude, and freedom from all disturbances from the exterior; also for affording the means of making them of the forms and size best suited to the wants of each House, without interfering with the unity of character maintained throughout the exterior; that all the lobbies and corridors adjoining them be only one story high, to admit of their being well lighted and ventilated.

Warming and Ventilating. That the warming of the Houses, committee-rooms, libraries, public and private lobbies, and corridors, be by means of warm water in pipes; that the ventilation of them be effected by a very minutely subdivided admission of tempered air from the floor; and that in the Houses, especially, the current upwards of heated and vitiated air be promoted by means of rarefaction created in a chamber above the ceiling, the air passing into such chamber through the perforated sides of a raised panel in the centre of the ceiling.

Acoustic Principle of the Houses. That, for the purpose of rendering the Houses effective rooms for hearing, in addition to the forms proposed, a continued sounding-board be affixed, so as to surround each House above the seat against the wall; that the walls be entirely lined with oak affixed to battening; and that the ceiling be, also, entirely lined with oak.

HOUSE OF LORDS.

Form and Arrangement. That the form of the House of Lords be an oblong, placed longitudinally to the approach; and that the internal arrangements be, in all respects, in accordance with those of the old House: that seats for distinguished visitors be above the cove forming the sounding-board over the seat against the walls; that two small, lateral, receding galleries, be provided at the throne end; and that the gallery for strangers and reporters be at the bar end: that the lobbies and corridors entirely surround the House.

HOUSE OF COMMONS.

Form and Arrangement. That the form of the House of Commons be an oblong, nearly approaching to a square, placed transversely to the approach, and arranged so that the distance from the bar to the chair shall not exceed that in the old House. That the seats for members shall be on the ground floor, and in receding galleries, and all within the least possible distance from the Speaker's chair. That the seats for peers, Speaker's orders, and reporters, be at the chair end of the House; and those for strangers in a gallery at the bar end. That the lobbies and corridors entirely surround the House.

Libraries and Refreshment Rooms. That the libraries and refreshment rooms be upon the level of the floor of the Houses, immediately adjoining and communicating with the private lobbies, so as to be entirely free from intrusion from strangers at all times.

Committee Rooms. That a large proportion of the committee-rooms be upon the principal floor, and the rest in the floor above; that none of them be less than 20 ft. of clear height; and that as many of them as possible be placed towards the river front, for the sake of cheerfulness, good light, and ventilation.

Lords' State Officers. That the rooms for the state officers of the House of Lords be in the front towards Old Palace Yard.

Public Offices. That the public offices be immediately adjoining, and contiguous to, each House, with distinct access for members and the public thereto.

Official Residences. That the whole of the official residences be incorporated in the design for the proposed building, without disturbing its unity of character; and that the principal rooms of each residence be upon the principal floors of the entire edifice, with immediate communication therewith.

The witness is directed to withdraw. Adjourned.

3. *Second Report from the Select Committee on the Rebuilding of the Houses of Parliament.*

By the Lords Committees [who were] appointed a select committee to consider of the report from the commissioners appointed by His Majesty to examine and report upon the plans which might be offered by the competitors for rebuilding the Houses of Parliament, and to report thereupon to the House; and to whom leave was also given to report from time to time to the House.

Ordered to report, That the committee have again met, and further examined Mr. Barry as to the plan marked No. 64., and the variations of which it would admit, in pursuance of the suggestions contained in their former report.

It appears to the committee that, after adopting some alterations and omissions not inconsistent with its character and object, the expense of the whole building may be expected to amount to 724,984*l.*, including 14 per cent to cover contingent charges, and any probable change in the value of materials; to which would be added about 60,000*l.* for the purchase of ground in Abingdon Street, rendered necessary for the elongation of the building as now proposed, and 30,000*l.* for fittings and fixtures.

The committee feel themselves, after a full consideration, justified in recommending this plan for adoption; trusting that, considering the magnitude of the expense to be incurred, such arrangements will be made by government as will secure the greatest vigilance and economy in carrying the object into effect; both with reference to the just remuneration of the persons to be employed, and the details of the work itself.

The further examination of Mr. Barry, referred to in this Report, is annexed by way of appendix.

APPENDIX. Minutes of Evidence taken before the Select Committee of the House of Lords on the Rebuilding the Houses of Parliament.

Die Veneris, 22^o Aprilis 1836. The Lord President in the chair. *Charles Barry, Esq.*, is called in, and examined as follows :—

The committee wish to know what alterations have been made since the plans were sent in ?

The principal alterations are,—a removal of the entire building from Westminster Bridge, to the extent of 150 ft., instead of being, as in the original design, 60 ft.; an extension of the river front, which has enabled me to enlarge the whole of the internal courts, for the purposes of increased light and ventilation; a removal of the two Houses to a greater distance from each other, and certain modifications in the arrangement of the offices, residences, &c. The plan, in all other respects, remains much the same, except in being more square, and upon a parallel with Westminster Hall, in consequence of the late alteration in the line of embankment towards the river. The composition and character of the design remain nearly the same.

Has there been any new distribution of the rooms ?

No, not any that are material, except as regards four committee-rooms adjoining the Speaker's house, which might have been inconvenient, as intercepting the access of the Speaker to and from the House. These committee-rooms are now placed in the centre of the river front.

Would it make any great difference if the library, which you have now destined to be at such an immense distance from the House of Lords, and from which the Lord Chancellor, when he is sitting, is every instant wanting books, were removed closer ?

The distance is not very great; it is connected by a corridor adjoining the gallery at the south end of the House, which corridor is about 80 ft. in length, and in a direct line; the House of Lords is nearer the library than it was in the original design.

The object of the question was, whether you could not make a sufficient arrangement for the rooms for the bishops, and place the Lords' library nearer the House ?

It would be injurious to the plan to do so. The approach to the library is commodious by means of the corridor alluded to.

Direct, without any turning ?

Yes; on coming out of the corridor of the House, the library is within a distance of 80 ft.

Will the House of Lords have so beautifully a shaped library as they have now ?

I think the proposed library will be in better proportion.

You have altered the smaller tower: the last was infinitely more beautiful, and more in character, was it not ?

It is still in the same character in its detail as the rest of the building.

Was your object in altering the smaller tower for the sake of reducing the expense, or from an idea of your own, that it would improve the building ?

Not for the purpose of economy, but to make it accord with the modified plan, as well as to improve the external character of the design. In the original design, the tower contained the Speaker's dining-room, which, in the amended plan, has been removed, so that so large a tower was unnecessary.

Then, in your judgment, it improves the elevation of the building ?

Yes; it is a great improvement.

You have stated that, by the taking down of the buildings in Abingdon Street, you obtain ground to the extent of about 100 ft. What increased extension of building do you contemplate ?

The ground thus obtained has a frontage to the river of about 200 ft.; about one half of which, or 100 ft., I appropriate to an elongation of the river

front. It was optional with architects to take or exclude from the site the property between Abingdon Street and the river.

Then the length of the building is considerably increased ?

Yes, the length of the entire building is increased about 50 ft., and removed nearly 90 ft. farther from the bridge.

Is it increased in size ?

In length only.

Is the tower in a different situation in the new plan ?

No.

Can you, unless you take down all the houses in Abingdon Street which you have the power to take down, open any view to the tower, and the part between the tower and the river ?

I propose for this purpose to take down the whole of the buildings on the optional ground.

It was understood this ground would be disposable ?

Yes; in fact, there were very few of the competing architects who did not take the advantage of it: they considered it to be a part of the given site.

Then the front of the new Houses of Parliament, according to the improved design, will be 50 ft. longer than according to the original plan ?

Yes.

Have the alterations, as contained in these plans, the distinct approbation of the commissioners ?

Entirely so.

Is there any alteration in the office appropriated to the Lord Great Chamberlain ?

None as to accommodation, but as to position only.

Does the sum total cover the whole expense ?

Yes, with the exception of the cost of the site, which I considered to be already provided.

By the original design the terrace towards the river was to be 26 ft. wide ?

Yes.

And by the altered plan that is extended to 30 ft. ?

Yes.

Is that the utmost limit to which you could carry it ?

Yes, I think so, when considered with reference to the character of the river front.

It is as wide as you could desire it if you had the power to increase it ?

Yes.

But you consider the additional 4 ft. an improvement ?

Yes, I think it is; it was made in accordance with a wish expressed by one or two members of the Committee.

Is that increased width obtained by taking more from the river than was taken before ?

No; but by setting the building back.

Where was the 4 ft. taken from ?

It is obtained by setting back the river front, which has not occasioned any loss of accommodation, as the entire building is increased in length.

So that the loss in breadth is made up in the addition to the length ?

Yes.

How long do you think that it would take to complete the building ?

I imagine about six years for the entire completion: it will be possible, however, to complete the Houses and committee-rooms long before that period, perhaps in about two years.

But, in the meantime, the temporary buildings need not come down ?

No, the present Houses need not be taken down until the new Houses are completed.

Does the alteration leave the distance between

the end of the House of Commons and Henry the Seventh's Chapel the same, or more than it is now?

The question, I understand, alludes to the width of the entrance to Old Palace Yard, where there is a very considerable alteration, which occasions an increase of width from 60 ft. to 100 ft.

How has that been done?

By shortening the Law Courts' front, as will be perceived in this plan. The view of the tower will be very much improved by the increase of the opening alluded to.

Where is the entrance for members of the new House of Commons?

In New Palace Yard. (*The witness pointed it out on the plan.*)

Would it not be an improvement to take away the proposed buildings at the south end of Westminster Hall, and make an entrance through the cloister?

It would be attended with an entire demolition of the cloister, and not have so good an effect as the approach which is proposed.

As to the expense, what is the increase in respect to the difference of the plan as now corrected, and the plan as originally proposed; is it in the additional purchase of the land in and near Abingdon Street which was not included in the original plan?

Yes.

What would be the additional expense of that purchase?

About 60,000*l*.

What would be the additional expense resulting from the increased length of the whole building?

It is rather difficult to answer that question, because upon the original plan no detailed estimate was made. The sum first mentioned was only a speculative estimate; but, as compared with that, it would be about 60,000*l*.

Can you tell what will be the diminution of expense resulting from the retrenchment of the decorations?

About 50,000*l*., occasioned by the omission of niches, statues, paneling of parapets, &c.

Therefore the addition to the total expense made by all the alterations is about 60,000*l*. or 70,000*l*?

Yes, including the fee simple of the enlarged site.

The purchase of the ground is in addition; and then you deduct the expense of the decorations, and the balance is about 60,000*l*. or 70,000*l*?

Yes.

What is the amount of your estimate, including every thing?

794,984*l*.

Does that include the purchase of the ground? It is exclusive of the site.

Then this is exclusive of the purchase of the ground in Abingdon Street and the embankments?

Yes; it is a maximum estimate as applying to the building only.

Does that estimate contain any amount for contingent expenses?

Yes.

At what rate?

At the rate of 1*l*. per cent.

Does that include the supervision by the architect?

Yes.

Does it include the river embankments?

It is exclusive of the river embankments, for which a grant has been already voted by the House.

Does that estimate include the interior fittings at all?

It does.

By interior fittings what do you exactly understand?

I mean closets, presses, fixtures of the domestic offices in the several residences, and things of that description.

Nothing that approaches to furniture and internal decorations?

No, not furniture.

Fixtures?

Yes.

Do you include grates?

No.

But you do chimney-pieces?

Yes.

What is your estimate of the embankments?

40,000*l*.

What provision is made for ventilation for these Houses; is it included in this plan?

The only provision for ventilation consists of the necessary flues in the several walls; but the apparatus has not been estimated.

Has your attention been turned to Mr. Nott's American stoves?

Yes.

There are some in the new Pantheon?

Yes, there are.

Do you think they are safe for buildings?

No; I do not think they are so safe as many other inventions for warming.

Do you not think they are less dangerous than others?

No; I should say with respect to them that there was an apprehension of danger arising from the iron becoming red-hot.

What calculation of prices have you adopted in forming this estimate?

The present market prices.

Do you consider those prices to be generally high?

Yes; I consider them to be high.

The price of iron has risen very recently to some extent, has it not?

Yes; the price of iron is now eight pounds or guineas in the pig.

Lead is also rising, is it not?

Yes.

Is the base intended to be built with granite?

No, certainly not.

That is done in all churches, is it not?

No, not in every one.

Is it intended to build these walls upon concrete?

Yes.

So as to build upon the bed of gravel?

Yes.

Has the estimate been formed upon the highest-priced stone that could be got?

Yes, upon the highest-priced stone that is likely to be used.

In order to understand the alterations, would it not be desirable to have a transparent plan to lay over the original?

I have not prepared any such plan, but I could explain the alterations as well without it.

Do the interior alterations involve any material alterations in the exterior?

No; not any of consequence, except the extension of the river and west fronts about 50 ft.

In what manner would that affect the river front?

In the manner shown by this elevation. (*The witness pointed out the same.*)

What is the difference in cost from the alterations made?

I should say about 60,000*l*.; that is, by removing the niches, paneling of parapets, &c.

Do you think the present plan, including the recent interior alterations, can be effected for 60,000*l*. less than the original?

No, because the plan has been extended. The extension of the plan makes up for the saving in the decorations.

The two additions together, balanced against the reduction, leave an increase of 60,000*l*. or 70,000*l*?

Yes, if the fee simple of the ground between Abingdon Street and the river is included.

In consequence of the contraction of the Law Courts' front, is it not necessary to make up for that; was it no part of the plan of the Houses?

It was wholly unconnected with the plan of the Houses and their accommodation.

Will there be a greater space than in the original plan between the south front of the proposed

building and the remaining houses in Abingdon Street?

Yes, the increase in the space is 40 ft. : it would, according to the original plan, have been 30 ft., and it is now 70 ft.

Something was said about the buildings in Abingdon Street, and the expediency of getting rid of those buildings, to give a full view of the grand tower : if you had your choice, would not you prefer getting rid of the buildings in Old Palace Yard, in order to extend the perspective view of the tower, and also to extend the view with regard to Westminster Abbey?

Yes, I should say that the buildings on the south side of Old Palace Yard would be better removed.

You say you have taken your estimate upon the highest price of materials?

Yes, at the present time.

And upon such highest price you have added 14½ per cent?

Yes, to cover all contingent expenses.

Have you not reason to expect that the prices will rather remain stationary, or will fall, and that, therefore, there is no necessity for charging 14½ per cent as a possible increase upon such estimate?

I cannot give an opinion. The allowance of 14½ per cent is not entirely for any possible increase that may take place in the value of labour and materials, but also to cover all contingent expenses.

So far as such charge of 14½ per cent is intended to include the possible increase of prices, do you consider the state of the market at the present time to require such a per-centage?

Yes, I should say, with respect to iron and lead, there is a probability of an increase.

The witness is directed to withdraw. Ordered, That this committee be adjourned to Wednesday next, at half-past three o'clock.

Die Mercurii, 27^o Aprilis 1836. The Lord President in the chair. *Charles Barry, Esq.*, is called in, and further examined as follows : —

Since you gave your evidence on a former day, have you had occasion to alter your opinion in any respect as to the amount of the estimates which you have delivered in, and the answers you made with respect to them?

No; except as to the amount for fixtures, which, I find, is not, as I then stated, included in the gross amount.

Have you seen any occasion to alter your opinion as to the time which you thought it would take?

Not at all.

Do you suppose that it would be possible to have any committee-rooms ready by next year?

I think it would be quite impossible.

You are aware of the great inconvenience felt at the present moment from the want of committee-rooms?

Yes, I am quite aware of that.

You stated, on a former day, that the estimate was to include the internal fittings : will it include all the fittings?

The amount which I put down for fittings, I see, from a paper which I have, is not included in the estimate.

What additional amount do you conceive may be necessary for fittings and fixtures beyond what is contained in the sum of 794,984½?

About 30,000.

You consider that that will be the whole expense, with the exception of the furniture?

Yes, with the exception of the furniture.

You do not propose employing concrete in any thing but in the foundation?

No.

And in so employing if you feel confident that it is the best material that can be employed?

Yes, I do.

What materials do you propose employing for covering the roof?

Slate.

Of the best quality?

Certainly.

Have you had any further communication with Mr. Walker with respect to the embankment?

No.

How long do you suppose that it would take to complete that embankment?

That is a question that it would be rather difficult to answer, where so much depends upon contingencies. I should think the embankment could be completed this year.

But, in fact, you cannot commence your building till that embankment is complete?

The foundations of a portion of the buildings may be brought up to the level of the ground line at the same time that the embankment is in progress.

The witness is directed to withdraw. Committee adjourned *sine die*.

REVIEWS.

ART. I. *Perspective Rectified; or, the Principles and Application demonstrated: illustrated with Sixteen Plates.* By Arthur Parsey, Professor of Miniature-Painting and Perspective. 4to. London, Longman and Co.

THE author of this work has long been known among artists as a miniature painter of no inconsiderable ability. The work has no pretensions to literary merit, as the author has freely acknowledged in the introduction; but it must be observed, nevertheless, that the first twenty-four pages contain a number of rational and comprehensive remarks on the philosophy of perspective, if I may be allowed the term, calculated to be understood by the general reader.

It has always been a difficult matter for persons not thoroughly conversant with this art, to divest their minds fully of the idea, that the abstract form of objects has the same appearance as their true form, when viewed perspectively. Mr. Parsey, in explaining this point, remarks that, "to prepare the mind for definite rules, the pupil must know that appearances are the effect of an object on the mind through the medium of the eye; and that a picture is a representation of that effect on the artist's mind, from some fixed spot, and at a particular time. The object, the eye, and the mind are inseparably connected; for, if we take away the object, the eye has nothing to convey to the mind; and the same result follows the removal of the eye or mind. As the object, the eye, and the mind have a fixed relative position at the time of making the drawing, the eye being at a certain distance from the object, and above, level with, or below it, the distance in the plane of the eye is commonly expressed as the point of view; which, without consideration, does not embrace the connexion of eye, distance, and thing." (p. 16.)

It is almost unnecessary to point out to any reader of this Magazine the utility of the study of perspective to artists and draughtsmen, and the disadvantages under which those unacquainted with this art must labour. I will not, however, go so far as Mr. Parsey, in saying that drawing and perspective are strictly synonymous; because geometrical delineations, isometrical projection, and all orthographical representations, are decidedly drawing; and yet none of them have any connexion whatever with perspective; but it must be distinctly understood that a thorough comprehension of the latter art is a species of knowledge so essential to a cultivation of the pictorial art, that without it the student cannot advance much beyond the rude essays of uncultivated taste. It is the only means by which a just and true delineation of objects in nature can be produced: so that a knowledge of perspective is not merely an assistance or guide to the draughtman, but it is the legitimate foundation on which the artist must erect his pictorial structures.

Mr. Parsey, having the same view of the case, has dispelled the mysteries of the art of perspective, by plain and intelligible illustrations and descriptions; and his book is divested of many of those pedantic and torturing technicalities which former writers on perspective considered essential to the full illustration of their subject.

Mr. Parsey commences his work with a very appropriate introduction; and he then explains the elementary principles of perspective, and the terms used in the art. We have next a number of comprehensive illustrative diagrams, showing the application of those elementary principles to the delineation

of rectangular, multangular, oblique-angled, and curvilinear objects.

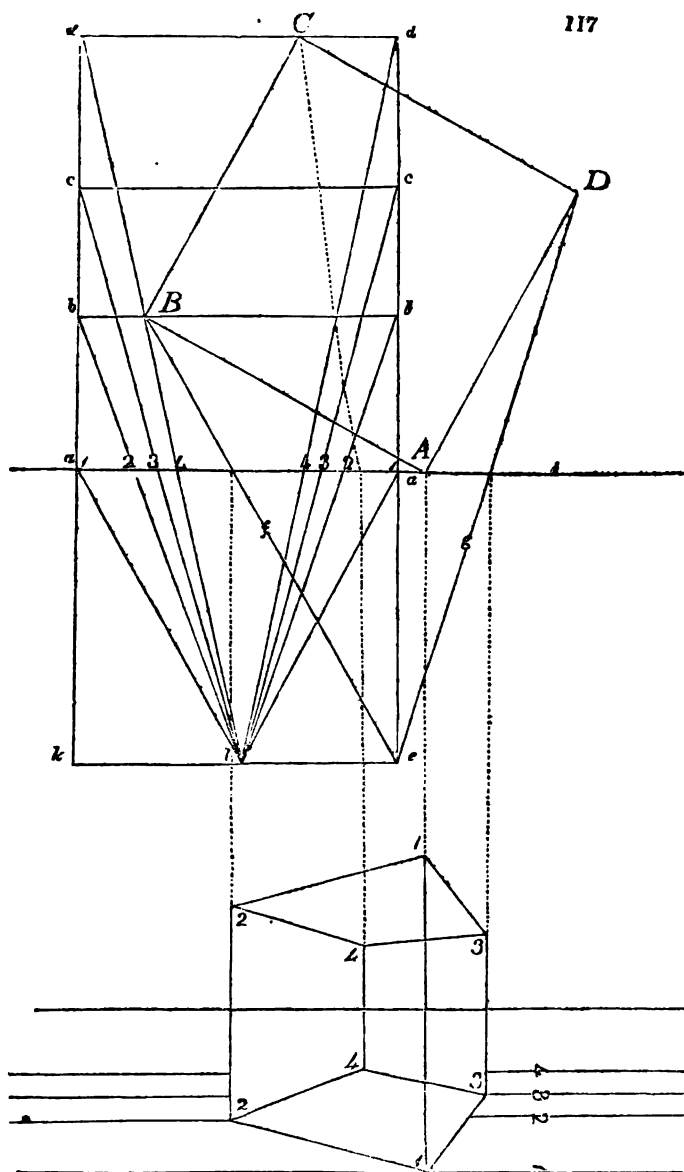
There is but little new matter in the work; but the manner in which the author has treated the subject has enabled him to condense a deal of matter in a small space; and yet it is given in a plain simple manner, so as to be easily understood.

There is one new feature in the work, however, which deserves notice, and which will render it interesting to the lovers of perspective: this is a method of drawing objects without the use of vanishing points. "The comprehension of vanishing points," says Mr. Parsey, "which govern all perspective diagonal lines, has always been an insurmountable difficulty. I have introduced a method of drawing objects without the use of them, which, I conceive, with a little practice and thought, will dispel any misconception, assign them their proper place, and henceforward produce a true perspective." (*Introd.*, p. viii.) The following enlarged diagram, copied from Mr. Parsey's book, will illustrate this matter:—

"In *fig. 117.*, ABC is the ground plan of a cube; e the station point; fg the visual rays; and ai the horizontal line, or plane of projection. The distance between aa is made equal to the height of the object to be projected. The lines aa , bb , cc , and dd , are drawn from the different angles of the plane, until they cut the parallelogram $dd ek$. From the points $abcd$ rays are drawn to the point l , which rays cut the plane of projection. Indefinite perpendicular lines are then drawn for the elevation; and from the base line, parallel lines are also drawn at the distances 1, 2, 3, and 4, found on the line ai of the plan; which parallel lines, cutting the perpendicular lines, determine the lower angles of the cube. The distance 1 1 determines the perpendicular height 1 1 in the elevation; the distance 2 2 on the plan gives the perpendicular height 2 2 in the elevation; and, in like manner, the other two perpendicular heights, 3 3 and 4 4, are found."

This method may do exceedingly well for simple rectangular objects; but it would be by far too tedious a process to follow in projection of complicated figures. Many different instruments have been invented by ingenious individuals, in order to supersede the necessity of vanishing points in making perspective drawings, one of which is figured and described in Vol. II. p. 49. of this Magazine; but no instrument has yet been invented for this purpose equal to the centrelinead of the celebrated Mr. Peter Nicholson. One of the best proofs of the utility of this instrument is, the fact of its being in constant use among draughtsmen who are in the practice of making large architectural drawings in perspective.

But to return to the work before me: Mr. Parsey has fully



defined the proper distinction between perspective and geometrical drawings. We frequently see well-executed geometrical elevations surrounded by objects in perspective, and, indeed, by landscape generally. Nothing can be more absurd than to introduce bold foregrounds and aerial tints a round a geometrical

elevation; and this inconsistency becomes more prominent when we find the practice followed in works of recent date, and by architects of some standing in their profession.

Another new feature in Mr. Parsey's work is, a few judicious remarks on naval perspective, which will be found both useful and interesting to those who are fond of nautical drawing and marine painting.

Before concluding these remarks, I regret that I find it necessary to observe, that there is one point connected with perspective, which the author has neither illustrated nor explained so fully as I could wish. In all elementary works on this subject, the first thing essentially necessary to be fully demonstrated, before commencing the practical application of the principles, is the *plane of projection*. This plane ought to be exhibited to the learner in the most prominent manner, both by diagrams, and by plain and simple explanations; for, without a thorough knowledge of the relative position of the plane of projection to the rays, and to the objects to be represented, the student will merely learn mechanically and imperfectly his art, and he will have no notion whatever of the theory of it. I have found, in teaching perspective, that a thorough knowledge of the nature of the plane of projection was attended with the greatest success in the attainment of a knowledge of this delightful, and almost magical, art, where

"Miles seem measured in an inch of space."

On the whole, Mr. Parsey's work is a well got up, handsome, and instructive volume, which deserves a conspicuous place in the bookcase of the architect and painter, in consideration of the philosophical introductory remarks; the advancement of a method of projecting objects without vanishing points; the judicious remarks on horizontal lines; the absence of unnecessary technicalities; and, in fact, the popular manner in which Mr. Parsey has treated his subject generally.

R.

ART. II. *Passavant's Tour of a German Artist.*

My shoulders almost ache with my shrugging them while looking over the "General Survey of Art in England," in M. Passavant's *Tour of a German Artist*, more especially that part of the "Survey" which speaks of the architecture of this country. That, condensed as it is into a few pages, the subject must be treated "slightly" and "sketchily," may well be imagined; yet its brevity is no excuse for its being also vapid and feeble; affording scarcely a glimmering of opinion, while what little opinion there is, conveys no high idea of the writer's ability as an architectural critic.

Even in his preface, M. Passavant is guilty of an extraor-

dinary omission; for, while he there enumerates most of the publications by German travellers who have visited this country, from Volkmann down to Prince Pückler Muskau, he says not one syllable in regard to Forster, whose *Geschichte der Kunst in England* would have furnished him with a model for his own "Survey."

How far he is accurate in the main part of his work, I pretend not to judge; but, if not more correct than when speaking of architecture, he certainly is not to be trusted implicitly. For instance, he says that the plans, &c., of Holkham House were published by Brettingham, in 1711; that is, about a quarter of a century before the building was commenced. It may be that this date is a mere error of the press; and, for what I can tell, it may be correctly printed in the German "1761." However, leaving M. Passavant and his translator to settle that between them, it is a mischievous error as concerns the reader, and one of that kind which ought to be very particularly guarded against by a printer. It cannot, however, be an error of the press, when the writer tells us, that the volume in question contains "a particular description of Holkham, with ground plan and sketches." Now, it happens most unfortunately, as regards M. Passavant, that, so far from there being a particular description, there is not *one syllable whatever of description of any kind*; the whole letterpress being confined to the title, dedication, and half a page of preface; for Brettingham, who affixed his own name to the designs, without once alluding to Kent, the real architect of the mansion was either too ignorant to be able to elucidate such a subject with his pen, or blockhead enough to imagine that it did not at all require elucidation. If we want a "particular description," or the materials for one, we may turn to Arthur Young's *Six Weeks' Tour*, and to Dawson's *Holkham Guide*; which latter is one of the best and most satisfactory manuals of the kind I am acquainted with. Again, as if one blunder at a time were hardly sufficient, we have a second mistake, or something very much like one, in the words just quoted; because "ground plan and sketches" hardly implies a series of plans, elevations, and *sections*; which latter, I presume, constitute the "*sketches*," although few things of the kind can be more unlike each other.

When M. Passavant mentions the India House ("another existing proof," he says, "of the absence of a solid taste in architecture"), he is pleased to attribute to it a portico of "*Corinthian* pillars!" This, to be sure, may be only a blunder, akin to that the other day in a report of a paper read at the Architectural Society; where the "*Corinthian*" portico of Covent Garden Theatre was mentioned as an instance of architectural impropriety in such a building! Still, it is a very

awkward one; and, as the writer assigns no ground for his censure of the India House, it is hardly worth while for us to puzzle ourselves in conjecturing what his mysterious language meant.

In the Post-Office, however, he seems to discover that "solid" taste, the absence of which offended him so much in the other building; for "particularly grand," he observes, "is the great façade with its triple colonnade; the inner large court, also, occupying the whole centre of the building, is highly effective, and quite in character with the front." Travellers have, certainly, the privilege of seeing strange sights; and, accordingly, M. Passavant may be allowed to behold what he calls a "triple colonnade," and "the inner large court"; although few, without having seen the building, would be able to understand the kind of triplicity he means; at least, it passes my comprehension to guess how three distinct rows of columns, viz. those of the portico, and the two extreme pavilions, can be styled a triple colonnade. Equally does he deal in enigma when he calls, or, at least, is made by his translator to call, the hall an inner "court;" for, unless when speaking of courts of justice, we never apply that term to any other than an uncovered space.

However, letting this pass as a mere oversight, I think he is equally incorrect when he calls it "highly effective, and quite in character with the front." As far as the columns alone are concerned, it may be so; but all the rest is poor, cold, insipid, without even an attempt at consistency of style. The arched windows and doors are positive blemishes; the hanging gallery in the attic above them anything but pleasing in effect; and the mean naked windows on the sides fit only for a kitchen or a stable.

M. Passavant does not expend all his admiration on the Post-Office; for in another work of Sir R. Smirke's he discovers still "greater consistency of style." Yet here, again, I differ *toto cælo* from him, being of opinion that he could hardly have pitched upon a more *mal-à-propos* example of such consistency than the Union Club-House, a structure of the most patchwork design.

However, it is not often that M. Passavant commits himself in such way; and for this reason: because it is very seldom indeed that he adds even a syllable of remark respecting the buildings he mentions; of which number, strange to say, the New Palace is not one. Are we, then, to understand that he considers it unworthy of being even named among the architectural productions of this country and age? Why, this is treating it worse than even Von Raumer does. There are other omissions, however, hardly less striking: for instance, he says no more of the London University than he does of the Palace,

although he enumerates some other buildings by Wilkins. In the same predicament is the beautiful chapel of Greenwich Hospital, perhaps the most perfect and finished thing of its kind in the kingdom; and yet very little spoken of either by Englishmen or foreigners. According to M. Passavant, Apsley House was modernised and improved, not by Benjamin Wyatt, but Sir Jeffrey Wyatville; and he also commends it as having "a fine portico, with Corinthian pilasters." Now, the portico is certainly not "fine," in any sense of that epithet; it is merely neat in itself, and a tolerably handsome feature. But what does he mean by speaking of the pilasters as if they constituted the portico. The expression is so worded, that it might be thought he mistook the pillars for pilasters: by a blunder, the reverse of that committed by Elmes, who speaks of the "tetrastyle portico" of Crockford's club-house, although there happens to be no portico at all, but merely four pilasters.

I have no doubt that M. Passavant's work contains much new and valuable information relative to the various collections of paintings and drawings he visited in this country, particularly as regards the early Italian masters; but he is exceedingly superficial and careless when he ventures to speak of architecture. Had he done so only incidentally, his inaccuracies and jejune-ness might have been overlooked: the case is different when he formally devotes an entire section of his "Survey" to the subject; and, as his reviewers will probably pass over those pages in entire silence, it is but proper that the world should know how far he is to be trusted in regard to such matters. — CANDIDUS.

ART. III. *The History and Antiquities of the Round Church at Little Maplestead, Essex, formerly belonging to the Knights Hospitallers of St. John of Jerusalem (afterwards known as the Knights of Rhodes, and now of Malta); preceded by an Historical Sketch of the Crusades.* By William Wallen, F.S.A., Architect. 8vo, pp. 207. London, 1836.

THE author has bestowed uncommon care and attention on this work; and he has succeeded in making it very entertaining; while the beauty of most of its woodcuts renders it quite a gem. The initial letters to the chapters are curiously designed, and beautifully engraved; and among the vignettes, that respecting the charge of the Hospitallers at the battle of Acre we consider as a most artist-like production. In a purely architectural point of view, the work cannot be considered of much value; but, as a piece of topographical history, and as the history of the Crusades, it is both instructive and entertaining. This will be evinced by the titles of the chapters, which we give as follows —

Chap. I. An Historical Sketch of the Crusades. II. First Crusade, 1096; William Rufus. III. A. D. 1099; William Rufus. IV. A. D. 1189; Richard I. V. A. D. 1200; John. VI. A. D. 1267; Henry III. VII. Manor of Little Maplestead. VIII. Little Maplestead Church. There is an Appendix, which occupies from p. 161. to p. 207.

ART. V. *Catalogue of Works on Architecture, Building, and Furnishing, and on the Arts more immediately connected therewith, recently published.*

PLANS for the Improvement of the Port at Leith; with Observations on the Tidal Currents; and on all the important Matter contained in the Report of the House of Commons on this and other Subjects connected with it; also with additional Arguments on the Possibility of effecting the Physical Destruction of any Harbour between Granton and Newhaven inclusively. By John Milne, Teacher of Architecture and Engineering, 8. James's Square, Edinburgh. Second edit. Edinburgh, 1835. Price 1s.

A prominent feature in Mr. Milne's plans is, to form his docks upon and in a rock, visible at low water, by excavating the rock, and using the quarried material on the spot, for building the walls, piers, breakwaters, &c.

Tables of Continental, Lineal, and Square Measures, by W. S. B. Woolhouse, Head-Assistant on the Nautical Almanac Establishment. Pamph. 8vo, pp. 10. London, 1836.

These tables have been already noticed, when speaking of Moller's *Architecture*, as they were originally published as an appendix to that work, and are only now sold separately for the convenience of those who may not wish to purchase the entire volume.

MISCELLANEOUS INTELLIGENCE.

ART. I. *Domestic Notices.*

ENGLAND.

OPENING of Islington Cattle Market. — The new cattle market at Islington, which opened on April 17th, is stated to be the sole property of Mr. Perkins of Betchingly. It stands upon an area of 15 acres, the whole of which is Mr. Perkins's freehold. It is capable of accommodating 7000 head of cattle, 500 calves, 40,000 sheep and lambs, and 1000 pigs. The pens and stalls are so arranged, that the dealers will have the opportunity of proceeding, without any inconvenience, close to the animals, and minutely examining them. In the centre of the market there is a range of buildings, containing eight dis-

tinct banking-houses, or money-takers' offices; and enclosing a spacious circular area for the purposes of an exchange for the meeting of salesmen, graziers, and others engaged in the business of the market. The cattle lairs are supplied with troughs filled with spring water; and which, at any season of the year, must prove a great relief to the cattle. The grazier will thus have the opportunity of fairly exhibiting the cattle for sale, instead of exposing them in the limited space in which they frequently appear at Smithfield. The market is approached on three sides, by wide and spacious roads, from which there are six handsome and convenient entrances, with iron gates, to be closed at night. At the principal entrance there is a splendid building, called the market-house, which is intended to furnish accommodation to the clerk of the market, and to be devoted to other purposes connected with the establishment. This great undertaking was commenced on the 17th of November, 1833, and completed at an expense of 100,000*l.* The whole was built and arranged under the superintendence of Mr. John Wigglesworth, who deserves the highest praise for the admirable manner in which it has been executed. (*Morning Chronicle*, April 17.)

The New Portman Market Theatre is to be proceeded with immediately; the expenses to be defrayed by the sale of 100*l.* shares. — *Tyro. Wilmington Square.*

Southwark. St. Saviour's Church. — Last month a deputation of gentlemen waited upon Lord Melbourne, for the purpose of soliciting a grant of money towards repairing the nave of St. Saviour's Church; but neither a decisive answer, nor much hope, was given. The sum required for repairing the nave is 12,000*l.* — *Id.*

Knightsbridge. — The infantry barracks at Knightsbridge are to be taken down at midsummer, and mansions of a superior kind erected in their place. — *Id.*

A New Suspension Foot-Bridge is in contemplation to be erected over the Thames, between the Waterloo and Westminster bridges, connecting Hungerford, in the Strand, with Pedlar's Acre, in Surrey. The cost is estimated, by Mr. Brunel, at 75,000*l.* — *Id.*

A plain Column, mounted upon a square pedestal, formed of granite, and supporting two lamps, has very recently been erected in the centre of the diagonal crossway from the north-east corner of Trafalgar Square, to a short distance beyond Northumberland House, on the Charing Cross side. — *Id.*

The New Post-Office. — The entrance to the new Post-Office from Cheap-side is being widened by the removal of six houses, which are now being taken down, on the Paternoster Row side of St. Martin's-le-Grand. — *Id.*

• *Bedfordshire. Ampthill.* — A new workhouse, situated at Ampthill, has been recently covered in: the interior fittings are now being completed. The external arrangements, if any style in particular can be discerned, are in the Italian manner. It is being built in an economical manner, at the cost of 2200*l.*, yet sufficiently large to contain a great number of persons. — *Tyro. Wilmington Square.*

Cumberland. Whitehaven. — The famous pier, built for the protection of the harbour by Sir John Rennie, has been entirely demolished by the recent severe storms. — *Id.*

• *Devonshire. Newton Abbot.* — A new Independent chapel is forthwith to be erected here, from a design by E. W. Gribble, Esq., Torquay, who has displayed great ingenuity in meeting the several difficulties caused, principally, by the confined and oblique-angled site. There are some novelties in the design, which seem admirably adapted to the purpose in view. The front (which, alone, I can now notice) is simple and effective; and the necessity of having more than one tier of windows is yielded to without producing that awkward effect too frequently met with. The style is Italian, presenting a façade of lofty arched recesses, within which are the doors and windows. There are two entrances, one at the second recess from either end; and over these are two long windows, both so placed by necessity. The other three

recesses contain lunettes above, and triple windows within the same breadth below. The whole is crowned with a pediment; and, altogether, fully expressive of its purpose; reflecting great credit, not only on the architect, but the very respectable body for whose use it is intended. — *A. M. February 16. 1836.*

Hertfordshire. Bishop Stortford. — Plans, elevations, &c., for a new workhouse, to be erected at Bishop Stortford, have been advertised for; to be sent in by the 17th of March; the result I have not heard. — *Tyrol. Wilmington Square.*

Hitchin. — A new workhouse is to be erected at Hitchin; the various works were put out to contract. — *Id.*

Waltham Cross. — The third cross erected by Edward III. to the memory of his queen, Eleanor, was Waltham Cross; which is more richly ornamented than either of the former. It has lately been partly restored, under the superintendence of W. B. Clarke, Esq.; but in a manner which certainly reflects very little credit on the workmen employed. The restored parts are either too large, or very clumsily fitted. Prior to its being restored, it had quite a picturesque appearance, and was much admired; but now, on the contrary, it is generally abused. The drawings of the restorations, by the architect, are carefully done; and, had they been properly executed, would, no doubt, have given much satisfaction. — *Id.*

Kent. Greenwich. — A new pier, to project about 160 ft. into the bed of the river, is in contemplation at Greenwich, and is expected to be both ornamental and useful. Steam packets will land passengers at the end of the pier, which will do away with the dangerous boating. — *Id.*

Lincolnshire. Spalding. — A new workhouse is to be immediately erected at Spalding: the various works have, also, been contracted for. — *Id.*

Middlesex. Stanmore. — The parish church of Stanmore is now closed, for the purpose of thoroughly repairing it: besides painting, decorating, &c., a new roof is to be added. The repairs are under the superintendence of Mr. Bird, surveyor, Kentish Town. — *Tyrol. Wilmington Square.*

Nottinghamshire. Newark. — A new church is in contemplation to be erected at Newark. — *Id.*

Somersetshire. Keynsham. — A new workhouse is in contemplation to be erected at Keynsham, near Bristol: it is not yet known whether a favourite is to build it, or if it is to be left to public competition. — *Id.*

Yorkshire. Sheffield. — At the south-west part of the town, near Blonk Bridge, a building, entirely of stone, is about to be erected immediately, which is intended for a circus and theatre. It will be so constructed as to admit of being formed into a circus for equestrian exercise, or dramatic performance, by taking up part of the proscenium, to admit of a ring 42 ft. in diameter. A very spacious green-room and treasury are provided on the ground floor; over these are ladies' and gentlemen's dressing-rooms; and the floor above consists of an extensive property-room, for containing all the paraphernalia of the stage business. Stables, for conveniently containing 12 or 14 horses, are provided under the stage. The height, from the ring to the ceiling joists, is 39 ft.; and the theatre, exclusive of the dressing-rooms, is 60 ft. wide.

The exterior, if erected according to the drawings, will be the most elegant and classical the town can boast of, not even excepting the Cutlers' Hall; and it is highly creditable to the ingenious, tasteful, and talented architect, James Harrison, Esq., Norfolk Row, Sheffield.

The whole extent will be about 80 ft.; with a Grecian Ionic receding portico, raised on a channeled, rusticated basement, with three beautifully proportioned doors, the centre one of which will be upwards of 7 ft. wide, with a neat pediment; the whole having enriched and highly finished truss-supported cornices. The portico, above, recedes some 5 ft. or 6 ft., with two columns upwards of 21 ft. long in antæ; the columns, which are fluted, and the antæ, are from one of the most elaborate examples of the Grecian archi-

fects, with the enriched neckings of the flowing foliage, and the involuted, or spiral, curves of the order. The cornice and frieze are continued along the wings, almost in an unbroken line, and finish with a bold blocking, except the part over the portico, where the blocking is made to form a plinth for an attic, with three neat and tasteful apertures; a neat Grecian cornice, and a blocking over it, complete the composition. There are two stories of windows, which are well arranged for harmony; and they greatly relieve the elevation, which is chaste and simple, and yet eminently imposing. No building in Sheffield will be able to compete with this substantial edifice, either for utility, strength, or beauty. — *G. L. S. Sheffield, April 3. 1836.*

SCOTLAND.

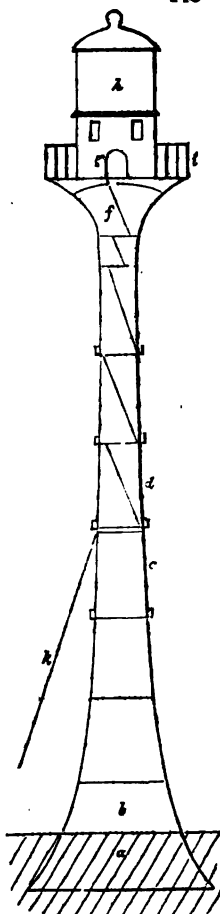
Metallic Lighthouses. — A memoir on this subject has recently been published at Edinburgh, by Mr. Samuel Brown, of which an admirable account will be found, illustrated by a figure, in that excellent newspaper *The Scotsman* of February 20. To all our readers who are interested in the subject we recommend the newspaper, or Mr. Brown's memoir, if it can be procured; but, in the mean time, we give the following short abstract: —

"It has been proposed to place a lighthouse on the Wolf Rock, near Land's End, a position where it would be exposed to the most violent storms of the Atlantic; and a plan was drawn up for the purpose by Mr. Stevenson, who holds a high rank in this department of engineering; which plan, Mr. Brown thinks, would require fifteen years for its execution, and cost 150,000*l.* Mr. Brown undertakes to erect one of bronze, 90 ft. high, which would answer the purpose as well as the stone one of 13½ ft. for 15,000*l.*, and to complete it in four months. Lighthouses are generally of masonry, the outer stones clamped with iron, and in large blocks, to lessen the number of joints. The one on the Eddystone Rock, near Plymouth, erected by the celebrated Smeaton, is 24 ft. in diameter at the base, and 90 ft. in height, of which 72 consists of solid masonry. That built by Mr. Stevenson on the Bell Rock, near Arbroath, is 40 ft. in diameter at the base, and 110 ft. in height, of which 102 consists of solid masonry. The defects of such a structure are obvious. In the first place, it consists of some thousand pieces; and, among as many thousand joints in it, a few faulty ones would be fatal to its strength. Secondly, its great breadth presents an enormous surface to the action of the winds and waves. Mr. Brown estimates, from experiments made by him at the extremity of Brighton Chain Pier in a heavy south-west gale, that the waves impinge, on a cylindrical surface 1 ft. high and 1 ft. in diameter, with a force equal to 80 pounds; to which must be added that of the wind, which, in a violent storm, exerts a pressure of 40 pounds. He computes the collective impetus of the wave on the lower part of Mr. Stevenson's proposed lighthouse for the Wolf Rock, of the surf on the upper part, and of the wind on the whole, to be equal to 100 tons. On the bronze column of 90 ft., which Mr. Brown proposed to substitute for the stone structure, the pressure, calculated in the same way, would be only 6½ tons. The natural height of the wave in a storm is supposed not to exceed 18 ft. or 20 ft.; but the *surf*, which is, we suppose, half water and half spray, rises, at times, above the head of the Eddystone column, *hooding* the lantern in a watery coat, and sometimes extinguishing the lights. It unfortunately happens, that adding to the height of the column scarcely produces any greater security to the lights; for, as the breadth must be increased with the elevation, the surf, instead of splitting and passing off by the sides, as it would do upon a smaller column, just mounts so much higher, having a greater surface to resist its onward movement. At the Bell Rock, which is not exposed to such heavy seas as the Eddystone, the surf in a storm mounts to the lights, which are 100 ft. above the ordinary level of the sea. At such times, the column is felt to *tremble* when struck by the huge mass of rolling waters; and the keepers, perched like two sea-mews on the top of a beacon staff, with nothing but the raging elements around them on all sides, feel their situation (as they confess) very forlorn, and naturally think of the sins of their past life.

" Fig. 118. is a section of Mr. Brown's proposed metallic lighthouse : it is 90 ft. high, 14 ft. in diameter at the bottom, and 4 ft. at the thinnest part. The lower half, called the base, is in four pieces, each piece consisting of a portion of a hollow cone (or paraboloid), wider below than above, and about 10 ft. high ; the lowest piece (*a b*) is sunk 3 ft. into the rock, and is 14 ft. in diameter at its under margin ; the fourth piece (*g*) is 6 ft. in diameter at top. These four pieces fit into each other, the neck of the lower passing into the socket of the upper, and both being secured by flanges ; ' so that the joints are, in some degree, stronger than the entire part of the shaft.' Above these is the smaller part of the shaft, which is in three pieces of nearly the same length, and fitted in the same manner. Above this, the shaft widens out into an inverted cone, which forms one piece, and supports the more important parts. These are, first, the keeper's house (*g*) which is 8 ft. in diameter, and 7 ft. high, with a gallery round it, ' for look-out, and walking exercise.' Next the lantern (*h*) 9 ft. wide and 10 ft. high to the cupola, for containing the lights. The house, or sitting room, is made of two concentric cylinders of sheet copper, 9 in. assunder, to equalise the temperature, and attached to each other by rivets : it is formed into compartments for bookcases, shelves, and lockers, with a recess for the back of the stove. Immediately below the house, in the swell of the shaft *f*, are the sleeping berths. To complete the description of the column, we shall add, that the upper section (*c*) of the base contains two tanks, one for oil, and one for fresh water ; the next section (*d*), above, is for coals and provisions ; and the one (*e*), above that, a general store. Access is obtained from below by the chain ladder (*k*) reaching down to the sea ; and the oblique lines in the sections above (*c*), represent ladders in the inside, by which the keepers mount to their aerial abode. The whole work, 90 ft. high, would cost 16,000*l.* or 17,000*l.*, if entirely of bronze ; 11,300*l.*, if the base to *c* were bronze, and the upper part cast iron ; or 9000*l.*, if entirely of cast iron ; and it would be erected in four months. The form of the shaft will immediately remind many of the elegant cast-iron lamp posts introduced into Edinburgh, some years ago, on the suggestion of Mr. Robison," engravings of one of which are given in our First Volume (figs. 196. and 197. p. 368.).

" The advantages of this plan of Mr. Brown are the following : — 1. The expense of erecting lighthouses is much diminished, so that six may be erected for the sum now spent on one. 2. The time necessary for building them is contracted from years to months ; and the chances of loss of life in the progress of the work are proportionably diminished. 3. The bronze lighthouse, from the slenderness of its shaft, and the smallness of the resisting surface, will not carry the wave and spray half so high as the stone lighthouse ; and, with two thirds of the elevation, it will afford equal protection to the keepers and the lights. 4. From this slenderness, and its diminished height, the strain of the surge and winds upon it, in a storm, will not exceed one tenth of what a stone structure is exposed to. 5. It has but eight joints from the bottom to the lantern ; while the stone lighthouse has thousands ; and the bronze joints admit of being made as strong as the entire part of the shaft. 6. That its separate

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portions, being complete circles, cast solid, each is, *per se*, capable of resisting any lateral impulse of the water whatever; and the column can only be injured by a transverse pressure operating upon its length. 7. That the cohesion of the materials, or the power of the column to resist fracture by a transverse strain, is probably a hundred times as great as in an equal column of stone. 8. That the natural stability of a bronze column, derived from downward pressure, must be considerably greater than that of stone. In addition to this source of strength, the column is to be secured 10 ft. into the rock by numerous bolts; so that it cannot be removed, without carrying all that body of rock along with it, which would require a pressure of several hundred tons.

"As to the durability of bronze in water, when proper precautions are adopted, two letters are given from Mr. Brande and Mr. Faraday, which remove every reasonable doubt. Both of them think that cast iron might answer sufficiently well for the upper part of the column. Nothing is said about the chances of injury from lightning; but the tower, being entirely metallic, it would act, we suppose, as a very perfect conductor, and convey the electricity to the earth without injury to the keepers. Bronze is an alloy of copper and tin. We should have observed that, in Mr. Brown's opinion, a bronze column could be erected on a sand-bank, by piling, or by a different process, which he describes, and where a stone structure would be impracticable.

"The situation of the keepers in one of Mr. Brown's lighthouses is one of the most singular which the multifarious occupations of human life present. The stone tower, though really less secure, has an appearance of solidity, which goes some length to satisfy the imagination; but Mr. Brown's watchmen are suspended in mid-air, on the top of the pillar, whose slenderness, compared with its length, reduces it to the appearance of a small rod. Cooped up in a cage, one half of whose narrow floor projects over the sea, or standing on a gallery which hangs over it completely, they live for months together without exchanging words or thoughts with their fellow mortals. There they pass the dark and stormy nights, with the winds howling, and sea birds shrieking around them, while the abyss foams and rages below, and the slender stem that bears them above it quivers under their feet when struck by the angry surge, or beaten by the tempest. No situation can be conceived more dismal and monotonous, more beset with terrifying circumstances, or better calculated to impress the mind with a constant feeling of insecurity. Such, however, is the force of habit in reconciling men to outward circumstances, which appal at first sight, and to real and formidable dangers too, that there is never any want of candidates for the most hazardous employments; and no difficulty is, we believe, apprehended in getting sober considerate persons to commit themselves to these sea-girt aerial cradles; nor any doubt felt, that, after a month's experience they will sleep secure in them, though lullabied by storms and tempests, the aspect of which, in such a situation, would drive a greenhorn landsman mad.

"To understand the importance of lighthouses, it may be proper to state, that the number of British vessels shipwrecked annually is about 550, or *one and a half per day*. The average burden per ship of the mercantile navy is about 110 tons; and, if we value old and new together at half the price of building, or 5*l.* 10*s.* per ton, we have 600*l.* for the value of each, and 330,000*l.* for that of the whole; which may be reduced to 300,000*l.* by deducting the value of sails, masts, and other materials, saved from some of those stranded. If we add an equal sum for the value of the cargoes, the whole loss from shipwrecks will be 600,000*l.* per annum. This statement proceeds on an old estimate from 1793 to 1829; but Mr. Maculloch says, in the *Supplement to his Dictionary*, that the number of ships lost, or driven on shore, in 1833, was no less than 800. It is probable, then, that the annual loss by shipwreck is not much short of a million sterling. If one fifth part of this loss could be prevented by additional lighthouses, the saving in money would amount to a million in five years, to say nothing of the still more important saving in human life." (*Scotsman*, Feb. 20. 1836.)

ART. II. *Retrospective Criticism.*

MR. THOMPSON'S Designs for the New Houses of Parliament. (p. 178.)—I have to regret a want of candour in the few remarks made by your able reviewer, B., on my humble work, especially in regard to the perspective views not being done by a mere carpenter's hand. This remark, from an unsuccessful competitor, does me infinite credit; and, as he acknowledges a want of time prevented him from understanding the entire arrangement of the set of designs, I would respectfully suggest to him the careful perusal of the second article in your Magazine for April, called "Architectural Pedantry," by Candidus. (See p. 149.) Your own objections are merely a matter of opinion, as "the confusion in the parts, arising from the want of a sufficiently striking leading feature," which you complain of, others may, and actually have, considered an advantage.

There is one point in your reviewer's remarks which I feel bound to explain to you: I allude to his objection to "*a passage 340 ft. long, with only one window at each end.*" In his haste, he has evidently omitted to notice the distribution of light from the two large staircases; also from a window in the west front; and again from the window over the water-closets fronting the courtyard. A distinguished architect has awarded me great praise for the very efficient manner in which the entire building receives its *lights*. No. 17. is a store-room for papers to the Vote Office; No. 18. is an office attached to the Private Bill Office; No. 19. is a door-keeper's dressing-room; and No. 20. an office belonging to the Commons' Serjeant-at-arms' official residence. These rooms, I humbly conceive, although receiving only secondary, or borrowed, lights, are yet amply lighted for their respective purposes.

As I before stated, and as is inserted in the titlepage of my book, I do not pretend to be any thing more than a mere working *carpenter*; but your reviewer has looked at my humble work as the production of a professional man. I was not aware that the introduction, in an immense pile of architecture, of a varied form and style of windows, was against architectural taste. I may be wrong; but my idea is, that the entire architectural building within observation of the eye should please as a whole; and that the eye should not rest on any particular portion, until the mind has embraced the entire building. What, I may be allowed to ask, is the objection to an oriel window, 10 ft. wide, uninterrupted by mullions? Is it simply because it has never been before executed that it is considered objectionable? The seven windows to the two porticoes are 5½ ft. from mullion to mullion (a greater width than has ever been executed); and they were introduced purposely, in order to prevent the building from having an ecclesiastical appearance. I have endeavoured to avoid, as much as possible, the appearance of either ecclesiastic or castellated architecture; and, on this account, I have been sparing in the introduction of mullions, and also of battlements.

With regard to the doubt of the capability of my design being erected, save in wood; this, no doubt, is in allusion to my trade; as, in a former letter to you, I expressed an opinion that not a fibre of wood ought to be used in its erection, save for scaffolding.

[In justice to our reviewer, we must observe, that he never saw Mr. Thompson's letter to us; and that we do not believe he had the slightest idea of making any allusion to Mr. Thompson's trade by his remark, which had merely reference to what he considered the impracticability of executing some parts of the design in stone.]

The pendants, in the House of Commons, complained of, are perforated ventilators. I have drawn an interior pencil sketch of this House, showing their construction; and, should your reviewer be passing this way, I should feel proud in having the honour of submitting it to his inspection; by which means, I trust, he would be induced to give the "*carpenter*" credit for his perspective views.

Trusting that, in thus going through my explanation, you will excuse my trespassing on your valuable pages, I have only to add, that I do feel proud in having had the opportunity, afforded by a liberal Government, of sending in a set of designs for a proposed new House, of Parliament; and when I see myself, by you, held up as an example for others to follow, by the publication of their designs, I do consider, humble individual as I am, that it may be an era the profession (to which I have not the least pretension to belong) may be justly proud of.

Not having yet seen the exhibition, at the National Gallery, of the 78 sets of designs now exhibiting, I confess my surprise at your approval of only one, and that one having a spire surmounted by a statue. I may be wrong in my taste, but I never catch a glimpse of the statue on the spire of Bloomsbury church, without smiling at its absurdity. Mr. T. L. Donaldson is a gentleman of acknowledged taste, and one that I entertain a high respect for, having done works under him at various times.

My anxious desire is to see a national building erected; and, in my opinion, it matters little where may be its site; whether on the old, or in conjunction with St. James's Palace, or in the vicinity of Leicester Square: but let us have one that will do us credit. — *Peter Thompson, Carpenter and Builder. 3. Osnaburg Place, New Road, April 4. 1836.*

Design for a Labourer's Cottage. (p. 120.) — In the details of this design, your correspondent directs (p. 127.) that, "each sash is to open, and to have a strong eye and hook to fasten it when closed." The following is a very good plan of fastening similar windows; and has, I believe, never failed in making dwellings both wind and water tight: — Provide and fix to each sash two 6 in. square neat bolts, to shoot into the sash-frames, top and bottom. *Tyro. Wilmington Square, April 2. 1836.*

G. B. W.'s Truss. (p. 142.) — G. B. W. tells you he writes in haste to reply to my observations on his roof; and I am sure I need not tell you that he also writes in anger; and I shall begin by telling him that a "combination" of haste and anger will form but a sorry truss to support an argument. If G. B. W. still sees "no reason why the queens should not be the principal support of the truss," I cannot help it. I still think it better to avoid making them so, for reasons stated in my former communication on the subject (see p. 95.). But mark how ingeniously he disposes of his lower king-post; that self-same king-post, too, the support of which, alone, I considered objectionable. Why he coolly says, if the span "were less, it might be dispensed with entirely;" premising the observation by stating that he "introduced the lower king-post truss for additional strength." Yes; were the span less, no doubt the whole of the truss might be dispensed with entirely. I now "turn to Nicholson's *Carpentry*," according to the friendly advice of G. B. W., to examine the roof of old Drury Lane Theatre; and will venture to tell him that the queen-posts he there, speaks of have nothing to do with the support of that roof. Why, if the queen-posts had never been placed there, the roof itself would have remained entire as long as the materials of which it was composed endured; they (the queens) being placed there, unquestionably, for the support of the beams and floors below, which were strapped and bolted to them; the principal braces, and the straining beam, *alone*, forming the most simple and complete abutment truss for the support of the roof above. But, before I lay by our good friend Nicholson, I would refer G. B. W. to fig. 3. p. 656. (I have his *Architectural Dictionary* before me); he will then see a roof in *principle* precisely the same as his own, only there the queens derive the whole of their support from the king, instead, as in G. B. W.'s design, the king from the queens. I will quote, verbatim, Nicholson's opinion of this design. It runs thus: — "But so many joggles are certainly an objection to this method; as the shrinking of the timber must be very considerable in three breadths, which would allow the roof to descend."

It would also seem that I do not stand alone in my opinions; for your able correspondent, Mr. Thomas Cook, has ventured to think with me, that

G. B. W.'s truss is "*not the best that could be constructed*;" and he has gone much farther than I did; for I only ventured to suggest an improvement in G. B. W.'s truss, but he has really told him he knows nothing at all about one. — *William Coles. Winchester, March 7. 1836.*

Drains and Traps (Vol. II. p. 179. and 330.) — Your correspondent, Mr. Milne, has favoured the readers of the *Architectural Magazine* with an article on the importance of perfect drainage to a house (Vol. II. p. 179.); and, as this can in no case be complete without one or more traps, has given the section of one (fig. 99.), which I believe to be the form adopted by workmen in nine cases out of ten (no bar to the introduction of an improved one, you will say), let the form of the drain be what it may. The principle of this trap is criticised by another correspondent (p. 330.) who signs himself A Junior; but whom I should judge, from his criticism, not to be a practical man. He also gives a section of his trap (p. 330. fig. 167.).

Speaking of Mr. Milne's trap, A Junior says, "to my mind would lead astray, rather than assist, a tyro;" and in explanation of his own section (Vol. II. p. 330. fig. 167.), he says, "Care should be taken that the dip-stone (a) should not touch the cover (b) within half an inch, in order that a current of air may pass to allow the water and soil to flow through the trap and drain. This latter point is that to which I wish to call your attention, as the article before referred to does not show this, or mention the subject of its construction."

These traps, I would inform A Junior, serve the double purpose of stopping the progress of vermin, and checking the stench, which would otherwise ascend from the main drain, or the cesspool, and infect the house; and hence they are called by workmen *stink-traps*. But how he would accomplish either of these objects with his trap, I am at a loss to conceive; for he requires that "the dip-stone (a) should not touch the cover (b) within half an inch;" a space sufficient to let stench enough pass to taint a dozen houses. But his greatest anxiety seems to be "the prevention of vermin;" and here, again, he is equally at fault: the dip-stone of the trap is intended to cheat the vermin, i.e. the rats (no easy matter, every one will say who knows any thing of the habits of these artful pests). But let us for a moment suppose a full-grown one arriving for the first time at this barrier, as constructed on the principle of A Junior: he will soon perceive there is a region beyond this to be explored, and forthwith sets about finding out the hidden pass: his first aim will be at the half inch space above; being foiled there, he will swim about on the surface of the water for a time; then away he dives under the water; and, having once made his way beneath the dip-stone, repeats the passage, with his companions, without let or hindrance, as often as inclination leads them that way.

That the writer has some knowledge of the subject, is evident from his remarks on the construction of this drain, and form of the bottom of the trap; which is decidedly an improvement upon that of Mr. Milne.

I shall take the liberty of adding a few hints on the subject, gathered from my own experience; but, if I am in error in my conclusions, I hope to stand corrected.

It is very essential that the drain, of whatever form it may be, should be well constructed, and of hard materials; and, where this is the case, there will be no fear of vermin breaking into it through its sides; it will, therefore, be only necessary to guard its extremities. For the entrance of all house drains I would recommend a cast-iron trap: these are made in a variety of forms and sizes, and should be fixed in stone-paved floors, with the top nearly flush, but sunk a little below the surface of the floor: they may be taken out and cleaned with very little trouble, when requisite. For the opposite end, in ordinary cases, let there be an iron grating, with the bars just sufficiently close to exclude a rat. Where, however, a trap built in the drain cannot be dispensed with, as in the case of a drain taking the soil from a water-closet, let it be made where it is easy of access, in order that it may be cleared out occasionally; for it must necessarily, in some measure, per-

form the office of a cesspool, and the sediment passing down the drain will be deposited therein; by which means it will, in time, if not emptied, stop up the drain as effectually as if the dip-stone touched the bottom as well as the top: the tendency to deposit will, of course, be less when the bottom of the trap is concave, instead of flat: still there will be a deposit. Let the dipping piece, which may be either of stone, slate, tile, or other hard material, be worked firmly into the sides of the trap, and not only touch the cover stone, but be made air tight to it with a joint of mortar, which will in nowise prevent the water and soil from flowing as freely as though the space of half an inch were left between them. — *Z. Hertford, Dec. 12. 1835.*

ART. III. *Institute of British Architects.*

APRIL 25. 1836. — P. F. Robinson, V. P., in the chair. The minutes of the last meeting were read and confirmed. The balance in the treasurer's hands appeared to be 217l. 0s. 11d. John Shaw, Fellow, having attended for the first time since his election, was admitted by the chairman. Anthony Salvin, Architect, of Somerset Street, Portman Square, was balloted for, and declared to be unanimously elected. Frederick Catherwood, Architect, being about to leave England for America, was elected Honorary and Corresponding Member, during his absence. Monsieur Beuth, His Prussian Majesty's Privy Counsellor, and Director of the Institute of Arts and Sciences at Berlin, was elected Honorary and Corresponding Member, agreeably to the recommendation of the Council.

The intention of Mrs. Parke to present the collection of the sketches made by the late Henry Parke, Esq., Architect, in Italy, Sicily, and Egypt, to the Institute, to be preserved in perpetuity, was communicated to the meeting.

A letter from Mr. Colquhoun, Agent and Consul-General of the Hanse Towns, was read; in which he proposed that facilities should be afforded to architects from Lubeck, Bremen, and Hamburg, visiting London, upon a recommendation from him to the secretary of the Institute; provided similar facilities be afforded to architects visiting the Hanse Towns by the authorities there. The same might also be observed with respect to subjects of the King of Saxony, whose Consul-General Mr. Colquhoun is. A letter was read from Sir J. C. Hobhouse to Earl de Grey, the President, acknowledging the receipt, and respecting the transmission, of letters of election to the King of Oude and the Rajah of Tanjore. A letter from Archdeacon Froude of Totness, Devon, in acknowledgment of his election as Honorary and Corresponding Member, was also read.

The following donations were announced as having been received since the last ordinary meeting: — Mr. Dipple, of Richmond, thirteen specimens of marble, and a communication thereon; Thomas Sopwith, Esq., Treatise on Isometrical Drawing; History and Description of Fountain's Abbey, York; Account of All-Saint's Church, Newcastle; D. Mocatta, Esq., Architect, copper medals, representing various buildings; F. Catherwood, Esq., Architect, Honorary and Corresponding Member, section drawing, 11 ft. long, of the Raffael Loggie of the Vatican, by Rossi, Rome, 1754; A. Poynter, Fellow, two fragments from the Treasury of Atreus at Mycenæ; one fragment of the truncated angle of a tripodal pedestal; two fragments of enriched cornices, and one small one of a draped figure; W. S. Inman, Fellow, cast of the lion's head, from the Parthenon, Athens, from the frieze of the Temple of Tivoli, &c.

A communication was read from Monsieur Brunel, announcing that he had at length broken his experimental pier by the accumulation of weight, ultimately, to the amount of 12 tons 1 cwt. 1 qr. 5 lb. Fragments of the construction at the points of fracture accompanied the communication. It appeared that, out of the eleven bars, or hoops, which had been introduced in the entire of the brickwork, three only were broken asunder. The others were all entire, being stretched or drawn only at the average of 18 in. on either side of the last, or principal, crack; and at the other crack about 3 in.; which, upon

breaking up the wall, was clearly indicated by the drawn marks of the iron upon the cement.

A letter was read from P. Legh, Esq., Honorary Fellow, about the accident which had occurred to the suspension bridge near Wakefield, Yorkshire, accompanied by a print.

Mr. Inman, Fellow, explained the nature of the building, and construction of the retort-house, of the South London, now Phoenix, gas works, Bankside; also of the roof of the infirmary of Christ's Hospital, and other buildings; and of the use of iron in the construction of conservatories. Adjourned.

May 2.—Earl de Grey, President, in the chair. This was the general annual meeting of the Society.

Mr. Donaldson, the secretary, read a letter from Sir John Soane, regretting his inability, on account of indisposition, to attend the meeting. Mr. Goldcutt, secretary, read the list of donors and benefactors to the Institute during the past year. Mr. Robinson, V. P., read the report of the Council, drawn up by him at their request.

The thanks of the members having been presented to the Council for their able exertions in promoting the views and interests of the Institute, the meeting proceeded to the election of officers for the ensuing year. His Lordship was unanimously requested to continue his important support to the Society, by continuing to act as President; to which His Lordship was pleased to assent. The following were elected as members of the Council:—Vice-Presidents, Messrs. Barry, Papworth, and Robinson; Honorary Secretaries, Messrs. Donaldson and Fowler; ordinary members of Council, Messrs. Basevi, Goldcutt, Kendall, Moore, Newman, Rhodes, and Wallace; Auditors, W. S. Inman and A. Burton. Adjourned.

May 9.—J. B. Papworth, V. P., in the chair. The minutes of the last meeting were read. A letter from Mr. Basevi, begging to be excused from acting for another year as member of the Council, having been read, as also a recommendation for the Council that the vacancy should be declared, and that an election of another Fellow to succeed him should take place, it was resolved that the recommendation be approved. In consequence of a recommendation from the Council that C. R. Cockerell, R. A., should be elected Honorary Fellow, upon payment of the usual contribution, the members proceeded to the election, and Mr. Cockerell was declared unanimously elected.

The following donations were announced as having been received since the last Meeting:—Mr. Dipple, Mason, Richmond, specimens of marble; Messrs. Ackerman, Pugin's designs for gold and silversmiths; Messrs. Jackson, drawings of composition ornaments; A. Burgess, Esq., four prints of old and new Bow Bridge; Monsieur Châteauneuf, various numbers of *The Museum*, a German periodical, containing the series of questions published by the Institute, translated into that language; and a German work by Müller (see p. 173.): I. J. Scales, Fellow, bronze medal, struck in commemoration of the suspension bridge erected at Ya mouth by him, and a copy of the chart of the Nile laid down from observations taken by him and Mr. Parke; Edward Nolan, Esq., cast in plaster prepared by a peculiar process; J. Britton, Esq., drawing of a parquetry floor formerly existing in the quarter space of the staircase of the Institute; various copies of Frazer's *Literary Chronicle*, by the editor; G. Godwin, Associate, printed copy of his *Essay on Freemasons*, read at the ordinary meeting, 14 March. (See p. 193.)

A communication was read from Monsieur Châteauneuf, upon the several editions of Vitruvius existing in the public library at Hamburg; and a paper from T. L. Donaldson, Honorary Secretary, upon those preserved in the library of St. Marc, at Venice. A letter was read from Mr. Dipple, Richmond, explanatory of various specimens of marble presented by him to the Institute. T. L. Donaldson, Honorary Secretary, read a paper upon composition in architecture. Charles Fowler, Honorary Secretary, read a description of a mode adopted by him to construct terrace floors.

The thanks of the members having been presented to the writers of the several papers, the meeting adjourned.

THE
ARCHITECTURAL MAGAZINE.

JULY, 1836.

ORIGINAL COMMUNICATIONS.

ART. I. *On Harmony as applied to Architecture.* From the French of QUATREMÈRE DE QUINCY. By P.

THE word *harmony*, and the ideas associated with it, are more frequently applied to music and painting than to architecture. Nevertheless, when we consider the true sense of the word, we are inclined to believe, that not only the positive meaning it expresses is as applicable to architecture as to any of the other arts, but that it must have been originally borrowed from the art of building.

The Greek word *harmonia*, harmony, means, in its primitive acceptation, tie, or joining; it therefore signifies a union between objects which belong to, or are allied with, each other, &c. In speaking of the walls of Tirynthus, which were composed of great stones, intermingled with small ones, which served to bind and unite the others together, Pausanias makes use of the word in question; and observes that each of the small stones served to form harmony between the large ones. (*Paus.*, lib. ii. c. 25.)

Music, however, appears to have more peculiarly appropriated to itself the word harmony. A special acceptation is given to it, to designate the scientific part of this art, which consists in the simultaneous action and combination of sounds. From the customary application of the word harmony to music, a sort of ambiguity has arisen, in the opinions entertained by some, respecting a system of technical similitude, where the same word is applied to other arts. They imagine, 1st, that every art owes to music the derivation of this word; and, 2dly, that, in borrowing the term, each art is not only indebted to music for the normal idea of harmony, but is bound to imitate its system, and to proceed, by equivalent and corresponding means, according to the nature of its elements.

From these notions have arisen certain systems, projected by some speculative minds, to chalk out, according to the prin-

ciples of musical harmony, the basis of the harmony which belongs to other arts; as if an equality of practical harmony could be established between an art which addresses itself to the ear, and one which presents itself to the eye. Thus, in painting, some theorists have arranged the shades of colouring in the order of tints and semitints, to correspond with the tones and semitones of music; and they have also studied to establish, between the concord of sound and that of colour, relations and affinities that the mere difference of the organs to which the respective arts especially direct themselves is alone sufficient to demonstrate to be impossible, imaginary, and purely nominal.

A like similitude has been invented for architecture. A passage of Vitruvius, in which he recommends an architect to have some tincture of the knowledge of music, has made people suppose that music and architecture had a reciprocal system of harmony. However, if Vitruvius thought it proper that an architect should understand music, he has given his reason for it, and has pointed out to what purposes this knowledge should be applied: he says, it is necessary, to enable the architect to manage the repercussion of the actors' voices in the structure of a theatre; and, likewise, to judge, by the sound, of the degree of tension of the cords of ballistas or other warlike engines.

Theories established on passages like these are as false in their principle as in their application. Nevertheless, several clever men may be quoted (the great Blondel among others), who, in treatises upon architecture, styled by them *Harmonical Treatises*, have taken pains to create purely nominal analogies. For example, according to their fantastic parallels, the Attic pedestal (who could ever doubt it!) signifies the key-note, the 4th, the 6th, and the octave, thus forming a chord; and, when a plinth is added, it is considered as a seventh, and the chord is thus changed into the fundamental discord, which is still conformable to the laws of harmony. So far all is clear: but there are the two fillets that terminate the upper and lower part of the scotia; and then two mouldings are here, as elsewhere, in the way of their whimsical system: what name is to be given to them? and how do they contribute to the harmony? Blondel and Ouverard are not discouraged by this difficulty. These mouldings, they say, must be considered as fugues, which, by their modulation, serve to prepare and resolve the chords, and to connect and soften the whole into perfect harmony.

But we have said enough, and perhaps too much, concerning these fantastic notions, which may be put to flight by a little reflection. When we consider that there is no work of art or industry which is not composed of a collection of parts, and that

the mode of union suited to each depends upon the diversity of the elements of which it is formed, so that the property of one cannot be transferred to another without manifest injury to the whole, it must be evident that they can have nothing in common, but the general and abstract law of the necessary correspondence which must exist between the parts to produce a whole, and the pleasing effect that ought to be the result of this union; that is to say, in one word, *harmony*.

Harmony is peculiarly applicable to what is called the general system of a style of architecture. Harmony exists, not only when all the parts are in the same style and taste, but when they have amongst themselves a certain connexion, which is so clearly defined, and so essential to the whole, that none of them could be displaced or transposed without the common bond (or, in reality, the fundamental reason which fixes their places and their use) being broken. In order that the beauty of harmony may be perceptible in any architectural system, there is one condition that even the definition of the word itself points out as necessary to be observed. If harmony is a bond of union between different and discordant parts, to enable us to perceive and appreciate the concord which it produces, our sight and our minds must seize, at one glance, both upon those parts, and the tie which keeps them together. To produce this effect, the parts must neither be too like nor too unlike. Too great a sameness in the elements of architecture would cause the principle of harmony to have but a feeble effect on the senses. This is the fault of Egyptian architecture: its elemental type is too simple; its imitative system approaches too nearly to identity. When every thing is simple, the effect is monotonous; and the principle of harmony has no visible application. On the other hand, when the elementary parts of architecture are dissimilar, incoherent, and confused, or when chance alone appears to have brought them together, as in Gothic architecture, the sight and the mind cannot discover any harmony belonging to such a system: there is no connexion between the objects and their details, and no principle of union dictated by reason and necessity.

If we depart from our abstract view of the subject, and examine what is meant by the word system in architecture, and what is understood by harmony in the habitual practice of the art, we shall find that the latter ought to preside over the plan of an edifice, over the disposition of its elevation, and over the distribution of its decoration and ornaments.

There is harmony in the plan of an edifice, when the whole appears to be the result of one mind; when all the distributions, each according to its respective use, cooperate in one general purpose; when each part, in connexion with its use, seems to be only the effect of the necessity dictated by the plea-

sure of producing symmetry ; and when, in short, by means of clear and simple lines, easily to be understood, art has united, in a manner both varied and uniform, the subordinate parts of the projected undertaking, in such a way that nothing appears to have been forced into difficult combinations, but that every thing is the result of necessity, and could not have been otherwise than it is. The harmony of the plan ought to become the principle and basis of the general elevation ; although, in some instances, an exception may be made to this rule, as far as certain palace fronts are concerned, which have no connexion with a general whole.

Harmony of elevation consists primarily in the correct proportions of the length, breadth, height, and depth which the eye, in viewing a building, seizes upon readily. This sort of harmony between the principal dimensions constitutes a part of the system of proportion, of which the works of nature, and the conformation of the human frame, afford examples up to a certain point. No precise rule, however, can be laid down concerning this ; as circumstances, depending upon locality, prospect, and position, ought to be taken into consideration by the architect, which cannot be reduced to general principles. The most important principle of harmony, which requires to be observed in elevations, is that which so disposes of the masses (the peculiar arrangement of which must depend on the general style of the building), as to point out clearly the exact destination of each, and, at the same time, to preserve the degree of unity between them which is necessary to make them seem parts of one whole. But this quality is, unfortunately, one of the rarest that we meet with, when we examine the construction of existing edifices.

Harmony in decoration, both in theory and practice, is, perhaps, easier to understand and to observe. Each order shows us, by its proportions, and by the affinities that are established between its form and its ornaments, the rule and pattern of true decorative harmony. Light or delicate ornaments, as may be easily perceived, would ill suit an order expressive of strength and solidity, and *vice versa*. An enlightened feeling in the inventors of the orders led them to proportion to the degree of strength expressed by each the lightness or richness of the ornaments to be employed. We thus find those columns, which, from the proportion of their breadth to their height, must necessarily be the strongest, the least laden with ornament ; and the consequence of this is, that, if an order suitable to the object in view has been fixed on, and its proper decorations are observed, harmony between the use and appearance of the building will be the result. Even if the order be not exactly suitable to the use of the building, it will appear satisfactory to

the eye, if it is consistent in itself. This shows that, in the decoration of every edifice, the principle of harmony of the order used should be followed in the decorations.

Harmony in decoration consists, not only in regulating the quantity, but the choice, of ornaments. The laws of this harmony are broken, when enrichment and decorative luxury are lavished upon buildings the adaptation of which requires an exterior character of simplicity; likewise, when edifices the rank of which demands decoration are left plain and unadorned. The same error is committed, when a mistake is made relative to the style of decoration applicable to the purposes to which the edifice is destined; as, for example, when trifling subjects, or the eccentricities of arabesque ornaments, are introduced in the interior of a church, or of any other place adapted for serious purposes. This kind of harmony, likewise, prescribes the management of the resources of decoration, so as to graduate their effect in the different parts of an edifice, according to the use made of each department. If, as has often been the case, all the splendour of decoration has been expended on the staircase of a palace, what will remain for the saloons and drawing-rooms?

This theory might be made, without doubt, the substance of a long and important treatise; for it contains ideas that might, if applied to all the fine arts, and architecture in particular, afford matter for many dissertations. However, what has been already said will be sufficient to afford materials for thinking to those who are disposed to examine the subject for themselves; and those who are not would derive no benefit from a more lengthened discussion.

ART. II. *Scraps of Criticism on the Designs for the Houses of Parliament.* By CANDIDUS.

LEST it might be thought that, after touching, from time to time, upon so many other topics of comparatively little moment, I can now find nothing whatever to say on a matter of unprecedented public interest as concerns architecture, I will put together a few desultory observations relative to the designs for the new Houses of Parliament. More than this I cannot pretend to do, because merely to express approbation or censure of each set of drawings, in an offhand way, would not be particularly edifying; while to enter into a regular examination and comparison would impose upon me not only a very long task, but one demanding a studied investigation of the subjects. In fact, until a person has in some degree familiarised himself with

the whole exhibition, and gone over it again and again at repeated visits, it is difficult for him, in such a number of designs for the same project, to enter upon any comparative criticism at all, especially as he must frequently go to a great distance backwards and forwards from one set of drawings to another, for such purpose, instead of being able to examine them together. Besides which, with the exception of those placed on the screens, it is hardly possible to view the whole belonging to any other set, many of the plans and sections being hung at such a height, that examining them is entirely out of the question.

With thus much, by way of apology for the paucity and scantiness of the remarks I am at present able to offer, I proceed to observe that, while it must be acknowledged that this exhibition of the designs is gratifying, as enabling the public to judge, not only of the discretion exercised by the commissioners in awarding the premiums, but also of the widely different tastes and degrees of talent in the architects, it must, according to my individual opinion, at least, be conceded, that the majority of the designs do not display that extraordinary ability which has been ascribed to them. They offer many clever ideas, many pleasing parts, many well-selected features, much correct and tasteful detail; and yet very few are satisfactory upon the whole; many being so discordant in style, and presenting such conflicting variety of character, as to possess no leading character. It should, however, be borne in mind, that a number of the competitors are individuals who have not yet distinguished themselves in their profession, probably are quite young in it; and that many of those who might have been expected to exert their ability, and put forth all their strength, on such an occasion, have chosen to stand aloof*: one reason for which may have been the style being restricted to the Elizabethan, or some modification of the Gothic, to the entire exclusion of classical architecture. Wherefore the first mentioned should have been so specifically recommended, in preference to any other mode of our ancient national architecture, is not very apparent, unless it was with the view of guarding against a too close imitation of religious edifices, and preserving a marked distinction between the Parliament Houses, and the adjacent Abbey and Henry the Seventh's Chapel. Certainly, no precedents are to be found in it, no associations are connected with it, suggesting it as peculiarly suitable for the required purpose; while it seems at once to have put a determined veto upon the idea of restoring St.

* Among those who have done so, may be mentioned the names of Wyattville, D. Burton, Gandy Deering, Fowler, G. Allen, Papworth, Vulliamy, Hardwick, Inwood, Hosking, Roberts, Wyatt, E. Blore, Field, Shaw, Donthorne.

Stephen's Chapel, at least so far as making that an external feature in the new pile, if either uniformity or consistency were to be observed. Neither can it be said, that the Elizabethan style seems at all well fitted for a public edifice of any importance, for which purpose it appears to be rather *un-English*; the examples wherein it exhibits itself, with any degree of prepossessing effect, being confined to country residences; and some of these undoubtedly display a certain formal stateliness and old-fashioned sumptuousness, that please, as uncommon and curious, even while they show themselves almost entirely devoid of grace and real elegance. In the best, however, the design is generally confused, and encumbered with incoherent ornaments, with details that do not naturally conform with the parts to which they are applied; and there are not unfrequently, besides, very mean and insignificant features interspersed among others which affect magnificence. Such a style, therefore, is by no means to be indiscriminately imitated at the present day, and least of all in a costly national structure, intended to be, in some degree, a monument of our architectural taste, and an embellishment to the metropolis. Something might be extracted from it, but more ought to be rejected; consequently, no little would have to be supplied, before it could be rendered available, even when so purified. The Elizabethan style, indeed, is very limited in its powers of expression; for it did not continue long enough in vogue to attain to that maturity which might have bestowed on it copiousness and flexibility.

Unless I greatly deceive myself, few architects will dispute what I have just said: at all events, the majority of those who entered the lists of competition have tacitly proved such to be their opinion, and declared, by their substitution of some earlier style, that they considered the Elizabethan either too poor in itself, and too undecided in its character, or too obstinate and unmanageable; else they were too little exercised in it to take it upon demand, especially on such an occasion, when the magnitude of the subject called for so much study and consideration in other respects, and the time was too limited to admit of material alterations being made during the progress of the drawings. Thus, as might almost have been anticipated, the conditions put forth were construed rather as a permission, than an injunction, to adopt the Elizabethan style. Not above half a dozen architects have attempted what comes at all under that denomination; and their ideas in regard to it are so dissimilar, that "Elizabethan" would seem to be no less comprehensive a term than Gothic. Only one of the premium designs is according to this style, namely, that by Mr. Hamilton; and I must say, that it appears to me to accord far better with what I should suppose intended by the epithet "Elizabethan"

than any of the others. So far it seems very well entitled to the reward it has obtained; for it would have been awkward, could not one set of drawings, in which Elizabethan architecture was adopted, have been selected, not for execution, but for commendation. As a specimen of what it pretends to be, it is sufficiently faithful and well managed; yet, while it shows the kind of grandeur that may be attained in such style, it likewise shows what can *not* be achieved in it. There is more of parade than real dignity, more of whim than of fancy, of quaintness than of beauty. It is an assemblage of small parts, arbitrarily put together, and added one to another till they form a pile, whose intricacy of design may pass for richness, and whose size confers upon it a certain species of grandeur. But, if this design exhibits the leading characteristics and physiognomy of the style adopted, it possesses very little, if any, of the character that should denote its purpose. To my eyes, the water front looks more like that of a vast hospital, than of an edifice intended for the reception of our two legislative bodies; nor is this appearance lessened by the great number of chimneys which crest its summit, and which certainly contribute to give it too much the appearance of being a permanent residence. This elevation presents no entrances, in which respect it differs from all the other designs, not greatly to its advantage; since one gateway, if not more, might have contributed to impart both significancy and effect. I should, however, confess that I neglected to inspect the plans, which may account for what the architect has done; and, for the same reason, I am unable to say whether this design possesses merits in regard to internal accommodation, and the form of the two Houses, that served to turn the scale its favour. Upon the whole, Mr. Hamilton ought to satisfy the admirers of the Elizabethan style, having adhered to it without any attempt at innovation; but he must also have convinced every one else that such style is altogether ineligible, at the present day, for an edifice which ought to be a model of superior taste, as commanding for its dignity as for its extent, and beautiful as well as rich. What we here behold is, on the contrary, merely the revival of an antiquated fashion in building, wherein the conflicting elements of opposite styles are mixed up together; and, although its application may be allowable enough where a building is altogether a matter of individual fancy, it is not one that deserves to be markedly adopted as an authority in the nineteenth century. For my own part, I should almost as soon think of selecting the Elizabethan style for a cathedral or a church, as for a senate-house.

After thus freely expressing my sentiments, both in regard to the style generally, and the use Mr. Hamilton has made of it, it will not be imagined that I am at all more favourably dis-

posed towards any of the other designs wherein it is affected, although with greater or less modifications of its character. Mr. Cockerell's strikes me as being too anomalous — as an attempt to bring together the two extreme manners of which the style admits; the quaintness and grotesqueness of the one with the more regular and Italianised air of the other. In the central portion of his principal front, this latter is manifested to such a degree, as naturally to suggest the question, — Wherefore not give us an improved version of the Italian style at once, avowedly and without disguise? If we may not go back to Rome or Greece, another short step would, at least, have conducted us to Jones, Webb, and Wren. Why, then, not adopt that species of architecture which we behold in Greenwich Hospital, where the application of it has tolerably well identified it with our national tastes and our patriotic feelings? It has, indeed, been fancied by some, that Mr. Cockerell has partly gone to that source for his ideas; since, according to them, the two domes, and their situation in the composition, cause his design to bear a certain resemblance to the building at Greenwich, although the similarity is only of the celebrated “Monmouth and Macedon” sort: there are domes in both, and there all affinity terminates; the low polygonal domes, which Mr. Cockerell has introduced in his design, being, in every respect, as unlike the loftily elevated ones at Greenwich as it is possible for things to be that have anything whatever in common, and that are included under one general denomination.

Mr. Salvin can hardly be accused of being a very servile imitator of the Elizabethan; yet he does not seem to have taxed his imagination or inventive powers highly, but rather to have contented himself with giving us an importation of heavy Dutch or Flemish architecture, surmounted by ogive or bell-shaped cupolas; and stuck full of windows, in whimsically carved framings, fitter to receive pictures, than for the purpose to which they are applied. These, and other odd architectural antics, contrast strangely with the ponderous lumpishness of the whole mass; and yet they also seem to assort with it well enough; for lumpishness of character by no means insures sedateness, but its freaks and friskings, like the frolics of an elephant, are apt to partake largely of the extravagant and grotesque. Most persons, I am inclined to think, will be of opinion, that Mr. Salvin has here perpetrated an architectural extravaganza. Still there is something about it “hugely” picturesque; attractive by its very deformity; to which deformity and picturesqueness the immense overhanging balconies or balustrades, the parapets of which are about as high as some of the stories of the building, contribute not a little. Enriched gables, and bays, which are generally considered as almost indispens-

able to every class of Elizabethan architecture, do not manifest themselves here; consequently, there is not that variety of outline, and of projecting and receding parts, nor that diversity in the features, which marks most of the other designs. The divisions are few and bold; nor can it be denied that, if its massiveness is thus greatly exaggerated, the *ensemble* also acquires consistency, and a certain degree of simplicity. It has been said to resemble a prison, but it has far more the air of being a vast "hostellerie," of the same class as those which figure so conspicuously in the "*grande place*" of many Flemish and German towns; for the multiplicity of windows bestow on it quite the reverse of a prison-like aspect. Upon the whole, it is exactly the kind of building an artist would delight to take a sketch of, but which one would now earnestly deprecate being erected, at least for any purpose like the one intended. What style the architect had proposed for the interior, it is impossible to guess, there being no section of any part of it.

Nearly the same remarks will apply to Mr. Rhind's design, although it has been termed by some "the star of the exhibition;"—that is, before the four premium sets of drawings had been hung up. This, also, is Elizabethan; and the architect appears to have availed himself largely of Audley End, a pile more celebrated for its original extent, than remarkable for any extraordinary beauties. The number of turrets, crowned by heavy cupola roofs, give this design a very crowded, confused, and bewildered appearance, and cause it to look, at first sight, not very much unlike some specimen of Oriental building. It is exceedingly cumbersome and heavily fantastic, and, in my opinion, almost as remote as can be from what most persons would consider either a characteristic sample of our olden architecture, or a happy application of it on an occasion like the present. I am, therefore, quite at a loss to account for the favour it has obtained.

Far more tasteful than any of the other designs partaking at all of the same style is that by Mr. Buckler*, who, rejecting all intermixture of what was of Italian and foreign origin, has retained such features alone of the Elizabethan as may be made to blend harmoniously with those of the Tudor and earlier domestic styles. One or two parts may be objected to, as being rather too homely for the rest, although they serve to set them off by a contrast, not otherwise disagreeable, than in as far as it interrupts that consistency and uniform degree of splendour which ought to be kept up throughout the whole of

* This gentleman is, I presume, the "Draftsman" alluded to by Mr. Savage, in his pamphlet entitled *Observations on Style, &c.*; a production in which some curious opinions, both liberal and illiberal, are broached.

a pile of this description. But there is much which is excellent in general form, in grouping, and in detail, in this design, and much which manifests a thorough relish for, and acquaintance with, the spirit of the style here adopted. Hence, while this design recommends itself by superior fidelity, as far as style is concerned, it does not betray that imitation of particular examples which some of the other drawings do, but strikes by its originality as a composition. There is a subdued kind of richness pervading it, attended with a certain breadth that affords repose to the eye, and prevents variety from degenerating into confusion. There is something exceedingly agreeable in the composition of the river front, the outline of which is rather striking; but it is, at the same time, rather more deficient in dignity than could be wished. The principal parts of the interior, likewise, as shown in the sections, are highly pleasing; exhibiting, it is true, sobriety, or even plainness, in regard to decoration, but also admirable taste. This set of drawings, deserves to be commended, also, for careful finish of execution; a point which some of the other architects do not seem to have attended to.

Of Mr. Railton's design (one of those which obtained the premiums), all I can say is, that it made so little impression upon me as hardly to engage my attention; consequently, I can offer no opinion in regard to it further than what may thus seem implied.

Owing to my having been led to speak, in the first instance, of Elizabethan architecture, and the designs more or less in accordance with such style, I have reserved all mention of Mr. Barry's until now. When expectation has been so greatly raised beforehand, it seldom happens that it is fully realised; but in no respect does this design fall short of the excellence report had ascribed to it, or of that superiority over the rest which its acquisition of the first premium betokened. So manifest and complete, indeed, is its superiority, as to throw the other successful drawings quite into the background; for it would be much easier to point out several that might render *their* claims doubtful, than one which approaches within many degrees of this. It is not, indeed, so striking at the first glance as some of the rest, it having little of that showy display and variety which they present; none of the manifold breaks, abrupt transitions, and violent contrasts, by which the majority seem desirous of taking the eye by surprise. Mr. Barry has pursued a directly opposite mode of treatment: notwithstanding that the style itself is exceedingly rich (that of the florid perpendicular English), the leading divisions are few; and all the parts are so well adjusted, the arrangement is so harmonious, that the eye immediately comprehends the whole scheme of each eleva-

tion without effort, nor is in the least degree fatigued by the luxuriance of ornament spread over the walls. The details and decorative minutiae do not obtrude themselves in such manner as to perplex, by drawing attention to themselves too soon; although, when they come to be examined, they can hardly fail to engage it. Simplicity, therefore, (and I conceive that every unprejudiced beholder must feel that simplicity is one of the leading qualities in this design,) is here not at all impaired by, but skilfully reconciled with, a remarkable degree of embellishment. Most undeniably, the species of simplicity here observable is the reverse of stern or severe; nay, were it not that such epithet would seem altogether a contradiction in terms, it might almost be called gorgeous, certainly sumptuous; yet it is sumptuousness so becoming, and worn with such an air of placid dignity, as to be tempered down into sobriety. It is exceedingly difficult to discriminate, by means of words alone, those qualities which approximate so closely as imperceptibly to slide into each other, there being no distinct boundary between them, to point out where one terminates before the other begins. Many will, accordingly, be apt to confound the degree of embellishment we perceive in this design with finery; a word which, as conveying the idea of preposterous and unbecoming decoration, is the very last that can, with any degree of propriety, be applied to what, although more than ordinarily elaborate, is so tasteful and refined. In the selection of the particular style he has employed, the architect has been eminently happy; and no less so in the use he has made of it, having bestowed on his design a character which, while in perfect accordance with that style, reminds us of no previous edifice. There is nothing ecclesiastical, collegiate, or domestic, in any one part; much less is it like a compound of two of these, if not of all three. Still it is possible that some may contend that it is ecclesiastical, because the majority of the forms and features may be traced to edifices of that class; but, then, unless they choose to be most disingenuously inconsistent, they might as justly urge that a portico, or any other application of the Grecian orders, causes a building to look like a church, as that individual features, derived from any style of our ancient church architecture, stamp it with the character exclusively appropriate to structures intended for religious purposes. Mr. Wilkins, for one, affects to consider the magnificent tower at the south-west angle, the lower part of which is intended to form the royal entrance, a positive absurdity; yet, in spite of the jokes, not altogether in the very best taste, which he has directed against it, I can hardly conceive him to be quite sincere, the view he has taken of the matter being so utterly at variance with the notions hitherto entertained in matters of art. If such a

tower is to be stigmatised as a wasteful absurdity, because some portion of it may be useless, or, at least, might be very well dispensed with; then equally, or still more, absurd must be such erections as the spire of Salisbury Cathedral, and the dome of St. Paul's; to say nothing of the dome which Mr. Wilkins himself has planted on the London University, or that which he is about to place — with what propriety it is for him to show, upon the National Gallery. Mr. Wilkins's criticism is neither very enlightened, nor very charitable; for, unlike charity, it does not begin at home.

To return from what will be considered a digression, if not an impertinence, I am of opinion, that not in external beauty alone, and in the masterly originality which stamps its outward appearance, does this design bear away the palm from all the rest, but also in the superior arrangement and striking combinations of the plan, and in the many fine internal features it presents. The ascent from Westminster Hall into St. Stephen's Hall, and the vista which would present itself from the latter, would have a most imposing and picturesque effect; nor would the approach, at the other extremity, through the royal staircase and gallery, be less striking, although of very different character. Whether, when the estimate shall be delivered in, it will be deemed expedient to curtail the design of what may be judged superfluous embellishment remains to be seen. Even should some of the ornamental features be omitted, it would still be admirable; but it is greatly to be hoped that pecuniary considerations will not prevail so far, on this occasion, as to deprive us of the satisfaction and honour of having at least one truly magnificent national edifice, that will be a credit to the country, when we have allowed about a million to be expended upon one that is almost a disgrace to it.

. May 16. 1836.

P.S. — My "Scraps" not having yet appeared, I take the opportunity of adding, by way of supplement to them, that the remarks on the premium designs in the *Gentleman's Magazine* are rather sparing of praise towards Mr. Barry. If I mistake not (for I write now only from recollection), it is there said that he has not entered into the true spirit of the Gothic style, but, on the contrary, made the horizontal lines of his building preponderate, so as to render it (in that respect, at least) essentially Grecian in its composition. If such be the case, then the view in the *Athenæum*, which I have now before me, must be singularly incorrect; or else, towers, turrets, pinnacles, battlements, and lofty oriels, carried up the height of two stories, partake more of the horizontal than of the perpendicular. Or, perhaps, it is meant that the windows (they being, on each

floor, on the same level throughout) occasion the degree of horizontality complained of; and that it is further increased by the extent of the façade, and by its being low in comparison with its great length; nor could the latter objection be very well avoided, unless the architect were now to place his great tower in the centre of the water front; which, could it be done without at all disarranging his plan, would prevent that feature from overpowering, as it is now apprehended it will do, Henry the Seventh's Chapel and the Abbey. But, at all events, if Mr. Barry's design can, with any propriety, be said to partake of the elements of horizontal composition, with equal, or even greater, justice may many buildings, indisputably in the Gothic style, and admired for their beauties, be charged with having the same defect.

At the most, the deficiency of perpendicular character, imputed to his design, is only in degree. Undoubtedly, such character does not pronounce itself so decidedly as in many Gothic buildings; yet, surely, it is not imperative that the same expression should invariably be aimed at on every occasion, particularly where it is desirable to avoid, as far as possible, a resemblance to any other class of buildings in the same style. Those, too, I apprehend, who are so lynx-eyed as to be able to detect any characteristics of the Grecian style in Mr. Barry's design, must also be so clear-sighted as to recognise very distinctly the principles of the Gothic in St. Paul's, and other structures by Wren, which have, nevertheless, been, not only uncensured, but extolled. But, even admitting for a moment that Mr. Barry has approached the confines of another style than the one professed, — that he has kept his eye upon that other style, he certainly has not committed a trespass upon it; therefore an action at law might as well be brought against him for that, as an action in any court of criticism. I will go further, and suppose that he has trespassed, — that the evidence against him is complete, still the charge would not come with the best possible grace from those who evidently entertain no violent antipathy towards that species of architecture wherein Gothic and Italian are mixed up — not blended together, but allowed to exhibit, without disguise, the conflicting elements of two opposite systems.

Lest this postscript should exceed the limits that can be allowed to one, I will here conclude, yet not without first remarking that, should another edition of the catalogue of the designs be called for, it might be greatly improved by adding the number of drawings contained in each set, and specifying how many perspective views and sections they include, the latter being by no means very general.

June 6. 1836.

ART. III. *On the Exhibition of the Designs for the new Houses of Parliament.* By A BRITISH ARCHITECT.

THE exertions of those who have taken a deep interest in the principle of fair competition have, at length, been crowned with success. Who dared to hope, a year and a half back, that the erection of new Houses of Parliament would have been submitted to the test of rival talent? that the skill and energies of ninety-seven architects would be enlisted in the service of the nation? and that even most of the unsuccessful candidates should speak with candour and respect of the fortunate rival who has been honoured with the parliamentary award? Yet such is the case; and in the short space of one year all this has occurred. The several designs, including those that have been rewarded by premiums, are exhibited with the sanction of the government; so that we are enabled to judge of the various degrees of talent displayed. Unfortunately, however, the candidates, by imposing 1s. entrance fee, have in some degree smothered public curiosity, and thwarted the best interests of the profession. But for this determination, half a million of persons might, ere this, have studied the question, and the whole nation have been enlisted in the maintenance of the conceded principle. I am happy to find that the publication of the successful design is likely to obviate the unlucky oversight, and disseminate taste and enthusiasm. May the only act of liberality wanting, free unpaid admission to the exhibition, immediately follow! Then may we exult over the greatest event that ever occurred to the arts in this country.

London, May 20. 1836.

ART. IV. *Remarks on the proposed Site of the new Houses of Parliament.* By CHARLES FOWLER, Esq., Architect.

[SOME remarks on the subject of the present paper, by Mr. Fowler, appeared in this Magazine in September last (Vol. II. p. 380.), to which we would refer the reader, as introductory to the present paper. Mr. Fowler has since printed, and given away to his friends, another article on the same subject; and, having kindly favoured us with a copy, we think we shall be rendering a service to architecture and architects in general, by giving it a place in this work. Our readers are well aware that we regard the rebuilding of the new Houses of Parliament on the same site, and the prescribing the style to be Gothic, as a sacrifice to prejudice, altogether unworthy of the present age. We recommend attention to what Mr. Rainy has said on the

subject (p. 309.), and also to the present article, which we regret that, owing to some mistake, we did not receive when it was printed, which was about the beginning of April last.]

“ALTHOUGH numerous suggestions have been already presented to the public on the subject of this great national undertaking; yet, as it is one of vast importance, more particularly in the estimation of those who take an interest in the advancement of the Arts, and the consequent industry and prosperity of the country; and, further, as the ultimate determination of the measure still remains under the consideration of Parliament, it may not now be too late to offer some further observations.

“In the first place, it may be assumed that it is the universal desire and expectation, that this great work should be rendered *perfect* in every respect; and that means will not be wanting to that end, either in regard to expense or talent. The first will be willingly granted by the legislature, upon reasonable data; and the latter will, doubtless, be obtained by the fair and open course adopted in calling forth the resources of the country, in regard to architectural skill and ability.

“Upon these grounds, the greatest results may naturally be looked for; and such ought, certainly, to be attained; or, in the event of failure, the disappointment will be proportionably great: for not only is the attention of this nation intently fixed on the event, but the eyes of all Europe are upon us; and, as the result will in great measure determine the rank which the Arts of this country must take in relation to other civilised states, an opportunity is afforded, such as rarely occurs, of establishing our national character in that respect.

“Deeply impressed with these considerations, and with an anxious desire for the promotion of architecture, through the means of this grand occasion, if made fully available, I have endeavoured to anticipate the result, and to form some conclusions as to the accomplishment of the great prospects which this measure holds out; and I regret to add my own opinion, that the course now being pursued will end in disappointment.

“I took occasion, a short time since, to put together some remarks, which were distributed amongst a few friends, relative to the restriction imposed on the competitors for the design in regard to *style*; which I consider to have been unwise, and incompatible with that free exercise of talent which it was the primary object of competition to call forth. But the objection to which I would now wish to call attention is of infinitely greater weight, and such as leads me to the painful conclusion before stated; viz. that the defective nature of the site, and its numerous local impediments, render it impossible to make this a perfect work; or at all answerable to our great resources and expectations.

“The objections to the situation may be considered under three general heads; viz. with regard to Convenience, Economy, and Beauty: and the more the circumstances of the case are examined, the more obvious, I feel assured, will become the deficiency of these important qualities.

“With respect to Convenience. It is presumed as undoubted, that Westminster Hall and the Cloisters will be preserved, and St. Stephen's Chapel restored; as being national monuments so eminently associated with our history, at the same time so admirable for their beauty, and venerable for their antiquity. The Courts of Law, too, with their numerous accessories, having been recently erected at an enormous expense, it would be deemed extravagant to demolish; and thus we have a large and irregular group of buildings occupying the front of the site, to such an extent, that any new building in the rear must necessarily be joined on to it, extending north and south, but completely intercepted on the west side, and having, in fact, no front at all; for the side next the river, being remote from public access, cannot properly be so designated.

" Now, the convenience of a plan depends mainly upon simplicity of arrangement; and it scarcely requires argument to prove, that simplicity is incompatible with a building so circumstanced. In every object to be attained, instead of pursuing it in a direct and proper course, the architect is turned aside to adapt his views to existing circumstances, however adverse from his purpose.

" No grand pervading idea can be adopted, by which the whole distribution may be regulated, and rendered obvious and intelligible in its relations, connexions, and purposes; but in lieu of it, a series of expedients and compromises must be resorted to; and, in the choice of evils, viz. the spoiling the old building or the new one, he is naturally thrown into the middle course, of dividing the damage between them.

" Thus much may serve to give some idea of the general principle in this respect; and it is further to be desired, that every person will judge for himself, by applying it to the numerous plans now before the public, in which so much talent has been evinced in the endeavour to overcome the difficulties alluded to.

" As a part of this branch of the subject, it may be proper to advert to the disadvantage and interference that will arise from erecting the new building on the spot where the Parliament will continue to hold their sittings; which must be attended with considerable sacrifice, either of public convenience, or of great expense in temporary expedients, or, most likely, of both.

" With regard to Economy, it should be considered in relation both to *space* and *expense*, which are essentially united; for an irregular and ill-arranged distribution of room necessarily involves a proportionate excess of expenditure; besides the waste of time and labour incurred by the want of compactness and order in the adjustment of the several parts: and this, being of continual occurrence, is probably of greater amount in the aggregate, although not so obvious to common notice as the other two evils, of which the quantities can be more easily and distinctly defined. Now, it must be acknowledged, that a building which is to form an adjunct to one already erected, of considerable extent, and to be in great measure incorporated with it, can have no proper unity, nor any entire and distinct principle of arrangement; but must necessarily be adapted to the circumstances of its associate: also, that the several parts of the principal edifice, instead of being regulated by their proper relations to one another, will be controlled and restricted by considerations and circumstances more or less foreign to the main object; consequently, that some portions must be perverted and extended, supplementary parts introduced, and, upon the whole, much more room taken up, and much more expense incurred, than was properly required: added to which is the lamentable conclusion, that the convenience of the building, as before explained, will certainly be in the inverse ratio to such excess of outlay.

" In regard to Beauty, or considerations of taste, it may be shown, that the situation precludes the possibility of making any grand display of architectural effect. There is only one side of the building that could be clearly seen, or that will be entire; and, as that will be quite out of view in approaching the entrances, it will, consequently, be of little effect as regards the impression to be made on the spectator; for persons who go to see and to visit the Houses of Parliament, in a vast majority of instances, will approach the edifice on this side of the river; and it will appear almost absurd to have occasion to traverse Westminster Bridge to obtain the only advantageous view.

" Let us consider, then, the effect of the western approach. The moment at which the view of the building opens at the corner of Bridge Street, the overwhelming mass of Westminster Hall presents itself, with its incongruous accessories: or, supposing those accessories to be assimilated in style, still there is the mass, occupying the most prominent station, and only a small

portion of the principal edifice is seen projecting from it northwards ; all the other parts being completely out of view.

" In proceeding further to obtain a view of the remainder of the edifice, you must pass through a narrow opening of less than 60 ft., formed by the south-west angle of those buildings and the opposite enclosure of Henry VII.'s Chapel ; and then in Old Palace Yard will be seen another small portion. Combining these two by some mental effort, and adding so much as may be supposed to intervene, you will thus obtain, in detail, a collective idea of the whole. Thus much for unity in external effect, which is an essential quality of the grand and beautiful in composition.

" Then it is further to be observed, that the ground is low, and in that respect very disadvantageous ; a defect which cannot be remedied as long as Westminster Hall exists. In addition to the obscurity inseparable from this situation, by the foreground being so preoccupied, it is important to consider the effect of bringing the intended edifice so near to so imposing a structure as Westminster Abbey. The Hall, with its immense roof, is of itself sufficient to overpower any adjacent building, however large, whose parts are not of colossal proportions : but the Abbey will complete the anticlimax of disparagement, and must render insignificant any composition, however beautiful, consisting of numerous and comparatively small subdivisions, into stories, windows, &c.

" It may be alleged, that some plan may be devised for masking or concealing the Hall, thus avoiding the interference apprehended ; but the idea can scarcely be entertained that so celebrated a structure should be shut out from the view : for such a sacrifice of an existing monument to one in expectancy, however great the promise of beauty in the latter, would be more flagrant than the proposition which was so decidedly determined by the public against the architect, on a recent occasion.

" With reference to internal effect, the same principles and objections will be found to apply with equal force as to the exterior. No unity of design can be preserved ; and the Hall and St. Stephen's Chapel, being mixed up with the new building, will not only fetter the arrangement, but will frustrate all the skill and endeavours of the architect to render his work consistent, and in good keeping with such overwhelming associates. And whilst these magnificent monuments will thus so irretrievably dispare the new parts with which it is proposed to surround them, they will also lose their own proper identity, and the whole will be rendered confused and ineffective.

" At the time when those modern buildings were commenced, which shut up the west side of the Hall, there was comparatively but little taste or desire for the preservation of the venerable structures which attest the taste and munificence of our ancestors ; and it is, therefore, not to be wondered at, that then no scruple was felt in consigning to obscurity that splendid monument : but it must be matter both of surprise and regret, that such a measure should have been carried forward in these days, by completing, instead of removing, those intrusive adjuncts, and disclosing to view the entire side of that grand building. The subject, however, is now once more to be considered in connexion with the general improvements contemplated in that quarter ; and it should therefore be always borne in mind, that the crowded position of those buildings, as well as their intrusion upon the Hall, mark them out for eventual removal, although the time may be distant ; and, therefore, in the present plans there should be no attempt to perpetuate the evil, by modifying or incorporating the present Law Courts and Offices with any new project whatever.

" If the objections which have urged against the proposed site be so great, and are well grounded, the question naturally arises, Why was it selected ? or, Is it not possible to find some other spot more suitable to the purpose ? It may be, that these objections have never been considered ; or, perhaps, it is conceived that a removal will be attended with still greater evils ; and that, in fact, no other situation can be found.

" I do not pretend to know what were the considerations upon which it was determined to adopt the old site ; but one topic has been advanced in favour of it, which obviously has great influence over the feelings of the members of both Houses of Parliament, and to which I would briefly beg to advert : I mean, the attachment arising out of historical associations. This principle is so perfectly consonant with good taste and patriotic feeling, that nothing can be further from my wish than to treat it with disrespect, much less to controvert it : but admitting, and concurring most cordially in its full force and influence, I do not see that it properly leads to the conclusion that has thence been formed.

" It is generally understood, that St. Stephen's Chapel is to be restored as a *chapel*, or vestibule ; and, therefore, will never more be used as a *House of Commons*. The peers, too, will not be seated again on precisely the same spot as their late house stood ; therefore some removal is contemplated, as unavoidable, with regard to both bodies of the legislature ; and it resolves itself into a question only of degree. In proposing the site of Marlborough House, or any point so distant, the historical recollections before alluded to would certainly be outraged ; but, if the locality of Westminster, as regards the vicinity of the Abbey, the Hall, &c., be retained, it might be deemed fastidious to object to the degree of removal as between 20 or 100 yards.

" It is not so much my object to recommend any particular site, as to show the urgent reasons for abandoning *that* which has hitherto been contemplated : but, in order to illustrate my own proposition, and to give a practical application to the views I have endeavoured to establish, I may be permitted to point to one spot that appears to me to present itself the most obviously, although others might also be suggested.

" In regarding this as a great national undertaking, I take for granted that the expense of clearing a mass of buildings for the purpose of obtaining an eligible site, will not be deemed an obstacle ; any more than it was on the occasion of erecting the General Post-Office, where the ground was densely covered with buildings. Under these considerations, I do not hesitate to propose taking the whole of the plot of ground extending from Bridge Street to Richmond Terrace, and lying between Parliament Street and the river.

" I have ascertained, that the space will be just sufficient for all the purposes of the legislature : and a building so situated will stand free and independent, presenting four entire fronts, in aspects that will be seen to the utmost advantage ; and possessing every possible convenience of access and locality.

" The distance from the old site will be less than 100 yards ; so that the *locality* will remain the same, and the objection of violating historical associations will thus be avoided : but this slight removal will, however, be sufficient to escape from the numerous and insuperable difficulties already insisted on. The new palace of the legislature will then become a perfect, entire, and independent structure ; in the design of which the architect will be free to follow the proper course to which the circumstances of the case, and his own genius, will naturally lead.

" If the Gothic style be still preferred, it may be adopted without fear of the composition being borne down by the disparaging influence of an overwhelming example of the same style immediately at hand ; and whatever form or character be given, it will have the advantage of being judged of independently, according to its own proper merits, and free from the influence of adventitious circumstances.

" In this situation, the building will stand conspicuously at one of the principal entrances into the metropolis ; and, to all persons passing either way, it will present four grand fronts in succession ; an advantage which, probably, no other spot can afford, and which scarcely any existing monument possesses.

" The principal view, from Westminster Bridge, will embrace the entire mass of the edifice, standing up, clear and prominent, above all other ob-

jects; whereas, if it stood on the other side of the bridge, the new building would form one of a large group, having the Abbey as the grand principal, and the Hall so mixed up as to render it doubtful whether it be principal or accessory.

"In regard to the expense of obtaining this proposed new site, it should be observed, that against the cost of the property to be purchased must be set the value of the present ground, which would then be available for many important uses: and further, there will be the saving of expense, as before explained, by avoiding the diffuse irregular plan of adaptations and expedients required in the one case; and having the opportunity, in the other, of simplifying and condensing the arrangement; which is more important in its effect upon the economy of means and space than can be generally appreciated. Impressed with these considerations, and in order to illustrate the capabilities of this site, I have been led to sketch out a general plan of the arrangements to which it is adapted; but, as I have already stated, that my object is more to call attention to the disadvantages of the old site, than to insist on the advantages of any particular substitute, so I would still less be considered as seeking occasion, in this way, to bring forward any design of my own for the intended building, any further than as subervient to the main proposition. The prize of this great undertaking has been justly and fairly offered to general competition; and I respect the principle too much to have any desire to interfere with its results.

"If I may be allowed to say any thing as to my own feelings and views in this matter, I would state that, from entertaining the sentiments I have already stated against the site, and the limitation of style imposed on the competitors, in addition to other considerations of a private nature, I was deterred from entering the lists of competition for the design; and, having hitherto kept out of the field, I would not now be considered, by what I have here advanced, as having any intention to put myself forward as an aspirant for the honour of executing this great work, or as interfering with the well-earned honours and rewards of the successful candidates; but only, that the talents of the chosen architect, and the means placed at his disposal, should be employed to the utmost possible advantage, both in regard to himself and the public.

"The impulse given by this competition has certainly done much in developing the ample resources of talent which the country possesses; and it is only to be regretted that the exercise of it in this instance is attended with such disproportionate reward to the competitors; for the premiums to be given will probably not amount to one sixth of the *expense* incurred by the artists, to say nothing of their own arduous labours. So far, therefore, as the public are concerned, there is nothing to regret; nor, in my opinion, does the result of the competition in any degree conclude the question as to site: on the contrary, I venture to appeal to the designs in support of my objections. My sole object is to give a right direction to the exercise of the great talents and resources which will be called into exercise on this grand occasion, and that we should eventually obtain a satisfactory and perfect work.

"It is but too common, and I fear too just, a remark, that our public buildings have hitherto lamentably disappointed expectations, and obtained for us no credit either at home or abroad; although, from the vast sums expended, the grandest results might reasonably have been looked for. Without digressing into any dissertation or enquiry as to the causes of this deplorable fact, it may be but just to advert to it here, in order that we may draw from it all the wisdom and warnings that such dear-bought experience can afford; and that, upon this most important of all such occasions, we may not fail to redeem our national character.

"In conclusion, I would briefly recapitulate the principal points of objection; viz. that the circumstances of the present site render it impracticable for the proposed edifice to be a perfect work, either in regard to convenience, economy, or beauty; that the new building, and those adjacent, will mutually

confound and disparage one another, and the effect will be disadvantageous to all; that some other site might be obtained, by which these objections may be avoided, and at an excess of expense eventually inconsiderable; and that, unless such a course be adopted, the result will certainly prove discreditable to our national taste, and a source of great and universal disappointment.

"If there be any truth or value in the considerations I have ventured to adduce in support of my views, I trust that they will not be disregarded by the members of the legislature, whose wisdom and authority will determine this important measure; or that this representation will be deemed unavailing, because it was not earlier presented to their notice. At all events, I feel that I have discharged a public duty in expressing opinions which, in my own judgment at least, involve most important consequences in regard to architecture; and in so doing I have proceeded entirely upon public grounds, free from any personal motive or object. It is therefore to be hoped, that my endeavours will be received in the same spirit with which they are offered, and without regard to the humble individual who presents them.

"Gordon Square, March 22. 1836."

ART. V. *Mr. Rainy's Plan for a "Metropolitan Improvement."*

Illustrated by a Map, in which Four different Sites, which have been proposed by different Persons for New Houses of Parliament, are indicated.

A VERY beautiful model of Mr Rainy's magnificent design was exhibited during the months of April and May, at his rooms in Regent Street; and the following paper, with a copy of which Mr. Rainy has kindly obliged us, will explain his views on the all-engrossing subject of the new Houses of Parliament:—

"In the month of December last, I ventured to offer a plan for a 'Metropolitan Improvement,' explained in a letter addressed to the noblemen and gentlemen, members of the British legislature; and one of the leading points was, the adoption of a different site for the new Houses of Parliament, Courts of Law, &c.; I then stated, that a model, illustrative of my suggestions, was in preparation; and, to fulfil that pledge, it is now respectfully submitted to inspection.

"To the professional skill of Mr. Lewis Vulliamy I am indebted for the architectural designs, as well as for many material features in the general arrangement. The style of architecture is different from that directed to be followed in the designs recently prepared for the new Houses of Parliament; and Mr. Vulliamy's reason for not having entered into that competition was, 'that the terms of the instructions issued from the Office of Woods and Forests precluded the style of architecture he has chosen; and which is, in his opinion (as well as my own), *the most appropriate* to the objects for which the building is intended.'

"It was to be anticipated that objections would be started to the project: some of them are too frivolous to be entitled to any notice; but I would beg to be allowed briefly to remark upon one or two others:—First, it has been urged that to propose the rebuilding of the Houses of Parliament and Courts of Law elsewhere than in that particular corner of Westminster where, for centuries, they have existed, is an offence little short of sacrilege; and next, that to imagine the demolition of any edifice, venerable for its antiquity, is, perhaps, something worse.

"With regard to the first, I would ask the objectors whether it is necessary or consistent to be governed, in these days, by a selection made in the twelfth century, because antiquity is said to have sanctified the spot; when, under

present circumstances, and as *London now exists*, a new locality can be found unquestionably the most convenient and advantageous for the purpose which the metropolis, viewed from one extremity to the other, can possibly afford?

"As to the other objection, it is true that I do contemplate the demolition of one or two edifices which, I am told, ought to be held sacred for their age. Were they distinguished ornaments of one of the noblest capitals of Europe, they might plead their age for their protection, and I should be the last to disallow the claim. But if respect for age, in the case of brick and mortar, and for localities, rendered remarkable by the celebrated names with which they are associated, *ought never to be violated*, why was it permitted to remove the venerable remains of the Savoy Palace, once the residence of the great John of Gaunt? Where are the vestiges of Burleigh House, in Exeter Street? Why should the abode of an English queen be converted into a depository for Egyptian relics? Why is the whole line of the Strand no longer adorned by the palaces of the illustrious of the land? Why does a Worcester or a Buckingham no more reside in Thames Street, or other nobles in Bishopsgate Street? or, indeed, as former sovereigns sometimes held their courts in the Tower, why has it happened that later kings have not occasionally done the same?

"The answer is obvious, and in point: because buildings adapted, as no doubt they were, to the notions prevailing in the twelfth, fourteenth, or sixteenth century, would be as unsuited to the ideas of taste, comfort, and splendour of the nineteenth, as their respective localities would, from the prodigious alterations and extension of the town; and, as a general reply to both objections, it is sufficient to say, that, were they admissible, they would clearly be fatal to every improvement which a different condition of habits, customs, manners, and circumstances, must from time to time demand.

"In reference to the expenditure, which the execution of the design would seem to imply, my impression is, that (independently of the sum of 600,000*l.*, the estimated cost of the Houses of Parliament, the Courts of Law, and their appendages) the whole of the plan might be carried into effect for an amount not much exceeding the recent outlay made by the corporation of the City of London in building the New London Bridge, and forming the approaches thereto. A return upon part of the capital (as much of the property to be purchased is of little comparative value) would, doubtless, be realised by the ground-rents upon new buildings; and I advert to the remarks hereafter quoted (p. 314.), as embodying unanswerable arguments for the rest. A magnificent line of communication, terminating at one end with the Regent's Park, and at the other with Trafalgar Square, having, in our time, been accomplished without any of the ruinous or disastrous consequences which were at first predicted (although, in the outset, that plan was treated as chimerical and impracticable), why should not the seat of the legislature become, as it were, a nucleus, and another line be carried through to the south; thus perfecting the great work, which was begun under the auspices and in the reign of his late Majesty George the Fourth, and reflecting equal honour on the reign of his present most Gracious Majesty?

"It is commonly, and perhaps not unreasonably, imagined, that he who, at the sacrifice of much time and thought, develops any plan, professing to be for the benefit of the public, has not, in its formation, been altogether unmindful of his own; and, where some disbursements take place, the supposition is proportionably strengthened. For myself, as I can conscientiously, so do I unequivocally, declare, that I have neither the expectation of profit, or the wish to seek, in the remotest degree, any pecuniary recompence, nor have I been influenced by any vain or selfish feeling. I think too well of the world to believe it incapable of attributing a nobler aim to an individual (humble even as I am); and I entertain so implicit a reliance on the liberality, honour, and candour of the British public, that I am satisfied they will at least extend to me the credit of sincerity on the occasion. — *Alexander Rainy*. April 15. 1836."

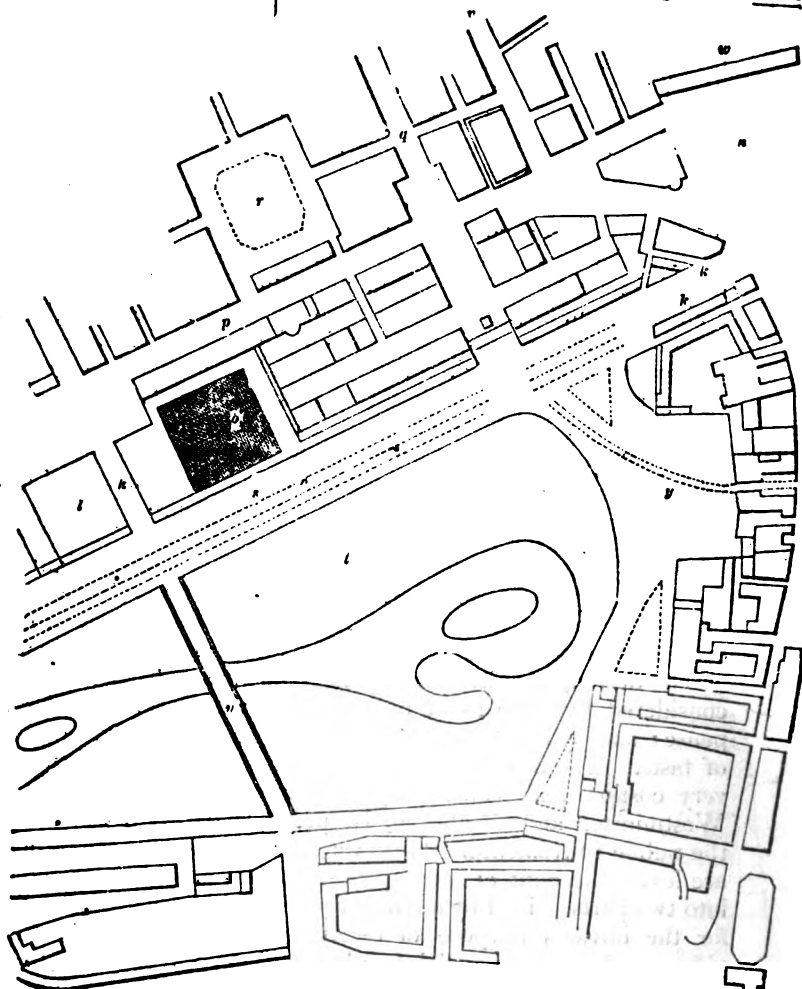
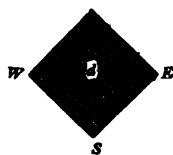
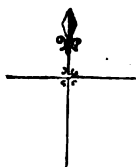
Mr. Rainy, with a degree of public spirit which we cannot too much admire, not only was at the very considerable expense of preparing the model, but he has also printed and circulated a lithographic plan, in which the new streets, and other alterations he proposes, are neatly indicated. We have engraved a portion of this plan, not only for the sake of showing Mr. Rainy's improvements, but also to indicate the sites which have been proposed for the new Houses of Parliament by Mr. Hume, Mr. Fowler (the details of whose plan we expect to give some account of in a future Number), and ourselves, as hinted at p. 100. The map will be found explained at the bottom of the pages in which it is given.

In Mr. Rainy's model, a column is shown in the centre of Trafalgar Bridge, and a triumphal arch at its southern extremity. The new road, which conducts from this new bridge to the Westminster Bridge Road, near the obelisk, terminates in a circular building, to be connected with the Dover, Brighton, and Southampton railroads, and with the proposed metropolitan circumferential railroad, which is intended to connect together all the railroads that may in future proceed from London.

The model is most beautifully executed; and the effect of the looking-glass, which represents the water of the Thames, is striking. The Houses of Parliament, and the Courts of Law, the bridge, and the triumphal arch, are of pure white *papier maché*; and the other buildings are of a yellow brick colour. The whole is placed on a platform, nearly about the height of the human eye, so as to admit of looking through the vista formed by the arched entrances to the Houses of Parliament at one end of the model, and through the triumphal arch at the other.

The design, notwithstanding its grandeur and beauty, will be considered by some to be impracticable with reference to expense; and by others, as unadvisable, in some respects, in point of taste. The bridge across the Thames would necessarily be very costly; and, considering its proximity to the bridges of Westminster and Waterloo, is, perhaps, hardly required for the public convenience. However, our objections to the bridge are less on account of the expense, than from its being divided into two parts, joined by a circular platform in the centre, formed for the obvious purpose of receiving the grand monumental pillar, which, in the model, is placed there. We object to a column so placed, on the principle that every ornament ought to appear to arise out of something essentially useful; or, at all events, to arise out of something in the situation important in itself, independently altogether of the ornament. Thus, the facings and other ornaments to doors and windows are particularly appropriate, because they decorate openings which are essential to the use of the building to which they belong. A column, or

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a, New Houses of Parliament, as proposed by Mr. Rainy. b, New Houses of Parliament, as proposed by Mr. Hume. c, New Houses of Parliament, as proposed by Mr. Fowler. d, New Houses of Parliament, as proposed by Mr. London. e, Site of the present Houses of Parliament, where the new Houses are proposed to be erected by Mr. Barry. f, f, Proposed Trafalgar Bridge and new road. g, Site of Triumphal Arch. h, Waterloo Bridge. i, Westminster Bridge. j, k, Proposed entrances to St. James's Park, at Spring Gardens and St. James's Street. l, Proposed site for the new Northumberland House. m, Proposed bridge opposite St. James's Street. n, Trafalgar Square. o, The Strand. p, Pall Mall. q, Regent Street. r, St. James's Square. s, The Mall. t, St. James's Park. u, St. Martin's Lane. v, Haymarket. w, National Gallery. x, Westminster Abbey. y, Parade in front of the Admiralty. z, Hungerford Market.



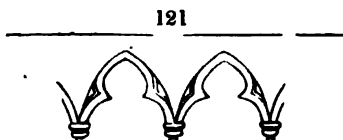
an obelisk, in the centre of a square, surrounded by buildings; or in the centre of the open space formed by the intersection of roads, is also appropriate; because it confers decoration and dignity on a locality already existing, and of considerable importance from its use. Every individual house surrounding the square which looks to the column may be said to participate in the expression which it confers on the scene; in the same manner as every house in a village having a church, partakes of the elevation of character communicated by the sacred edifice. The points where grand public roads intersect each other, or even where a main road branches off in two, are felt by every one to form important areas; and are, consequently, much more appropriate for monuments of any kind than any part of the common course of the road. But imagine the parallel lines of the road to be swelled out in width at any given part, solely in order to make room for a column, or other public monument, in its centre, and how deficient in dignity will such a locality appear. The swelling out of Mr. Rainy's bridge in the centre, into a circular platform, so as to make room for the column, seems to us to be an error in taste of this kind.

We have no doubt that Mr. Rainy saw the error after the model was executed, and that this is the reason why he has not exhibited the circular platform in his lithographed plan. With regard to objection in point of expense, Mr. Rainy says:—

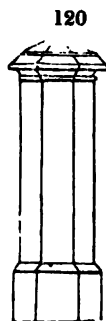
"I am fully prepared to meet every objection to the magnitude of the design, and the expenditure which the carrying it into execution would necessarily involve; and my reply is, that 'every nation derives dignity and importance, not only in its own mind, but in that of others, from the splendour of its institutions and public buildings;' that an immense saving of time will accrue to all those to whom it is most essential; and that, as the pecuniary resources of this country are unequalled by any other in the world, they cannot be better, or more wisely and efficiently, applied than in aiding the industry, skill, and enterprise of the people."

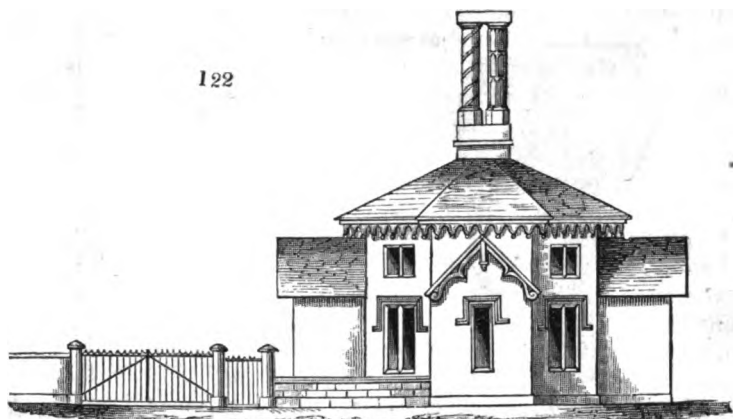
ART. VI. *Design for an Entrance Lodge.* By EDWARD BRIGDEN, Esq., Architect.

THIS cottage, which is of the smallest size, consists of a living-room (*fig. 123. a*), with a large recess (*b*) next the road. The entrance is through the porch (*c*); and *d* is intended for a scullery: *e* shows a staircase, leading to an octagonal bedroom, over the whole.

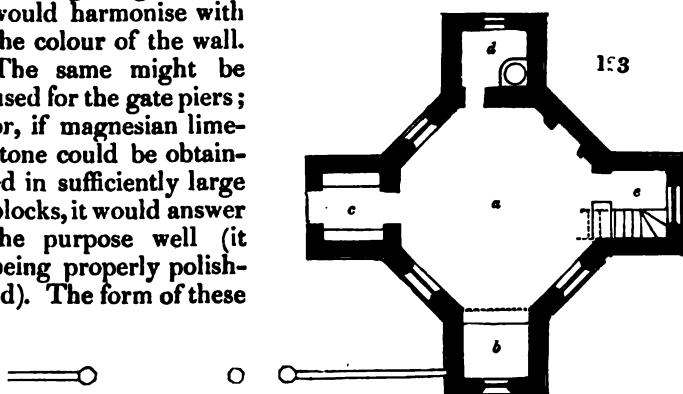


The plan is drawn to a scale of one sixteenth of an inch to a foot. The elevation is shown in *fig. 122.*





The most appropriate material for the walls of this cottage would be flint or rag-stone. This stone, laid in random courses, and neatly tuck-pointed, has a very good effect. The dressings might be of Yorkshire, or any other stone which would harmonise with the colour of the wall. The same might be used for the gate piers; or, if magnesian limestone could be obtained in sufficiently large blocks, it would answer the purpose well (it being properly polished). The form of these

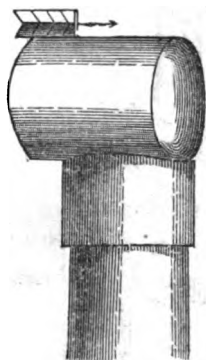


piers may be as shown in *fig. 120*. The roof may be covered with slate, or with stone tiles. The flues should be conveyed to the centre of the building; and the chimney-stacks, which are ornamental, may be of Austin's patent stone. *Fig. 121.* shows the eaves-boards, which may be made of fir, on a larger scale.

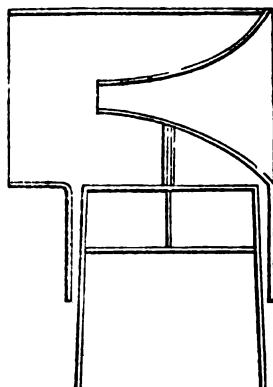
Bristol, November 20. 1835.

ART. VII. *The Nautical Cowl, for curing smoky Chimneys.* By R.

I HAVE seen and examined a model of this apparently efficient chimney-pot and cowl (*fig. 124.*) in the shop of Mr. Dowson, ironmonger, Welbeck Street.



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Mr. Dowson has manufactured and used this description of cowl for the cure of smoky chimneys with perfect success, and has found it to answer in situations where every other description of chimney-pot has failed. Its closed top prevents the downward draft: but the chief merit of the invention is the funnel, or trumpet-shaped, form introduced in the cowl; the broad end of which is always turned towards the wind, which passes through it, and draws out the smoke with it, with much rapidity.

Mr. Dowson has found this description of cowl particularly beneficial where there are eddy winds; and in cases where the smoke blows down the chimney, as is frequently the case in exposed situations. This cowl (the sketches of which will be fully explanatory without farther description) was originally intended to be used on board of ship.

If my memory serves me rightly, a cowl similar to this in form, and exactly the same in principle, was figured and described either in the *Encyclopædia of Cottage, Farm, and Villa Architecture*, or in the *Gardener's Magazine*, a few years back; and the recollection of this circumstance induced me to recommend and sketch a similar cowl for the cure of a smoky chimney at Somerset House, six weeks before I had seen Mr. Dowson's model. *Bayswater, March 4. 1836.*

Mr. Dowson's cowl certainly promises to be more effectual than many others which are now in use; but it has the disadvantage, in point of taste, in being less architectural than some that have been figured in this Magazine. Among the commonplace brick houses, and deformed stacks of chimneys, of the crowded parts of London, the form of a cowl is of less consequence; but its want of architectural expression is a great objection, when it is applied to a handsome building in a town, or to any building whatever in the country. We wish some plan were devised by which every flue should terminate in some contrivance which should effectually prevent the return of the smoke, without waiting to see whether such a contrivance were necessary or not. This contrivance should be introduced in building the flue; and should be included in, and concealed by, the masonry. There would then be no complaints of smoky chimneys; and all chimney-shafts and terminations would, or might, be made highly architectural. — *Cond.*

REVIEWS.

ART. I. *An Historical Essay on Architecture.* By the late Thomas Hope. Illustrated from drawings made by him in Italy and Germany. Royal 8vo, 2d edition. London, 1835.

(Continued from p. 226.)

CHAP. XIX. *Sepulchral Architecture.* The real ancient sarcophagus was made to imitate a house in its general outline, in allusion to its being man's last dwelling here below. Even the smaller cinerary urns were made in that shape. At Ravenna are many tombs of a form quite peculiar; viz. that of a large coffer, with a convex top, or lid, supposed to be in imitation of a style then prevailing at Constantinople, and still to be found in Turkish cemeteries.

Chap. xx. *Early Style of Architecture on this Side of the Alps, derived from Italy.* The Roman architecture spread with the Roman religion; and the same missionaries from Rome who taught the Pagans the Christian faith brought with them builders or architects for directing the erection of churches by their converts.

Chap. xxi. *Investigation of the Circumstances which, towards the End of the Tenth Century, affected Architecture generally and extensively throughout Europe.* These circumstances were chiefly the formation of associations, under the name of free corporations or guilds. These bodies, in order to enjoy the exclusive exercise of their profession, made that profession a mystery, or craft; so that every description of industry and art had its particular craft, or corporation. Architects, at this period, became associated under the style of free and accepted masons.

"Those Italian corporations of builders, whose services ceased to be necessary in the countries where they had arisen, now began to look abroad towards those northern climes, for that employment which they no longer found at home: and a certain number united, and formed themselves into a single greater association, or fraternity, which proposed to seek for occupation beyond its native land; and in any ruder foreign region, however remote, where new religious edifices, and skilful artists to erect them, were wanted, to offer their services, and bend their steps to undertake the work.

"These corporations, no longer destined to exercise their profession in any single country, but in whatever regions, most distant from each other, might require their services; seeking a monopoly, as it were, over the whole face of Christendom; required an authority, a protection, an exclusive privilege, a prohibition to all such as were not members of their body: even the very natives of the countries whither they went as mere strangers, with the intent of wresting all the employment out of the native hands; which no single temporal sovereign could give them, out of his own dominions, or would give them within these. This they could only obtain in the different parts of Europe that acknowledged the religious supremacy of the Pope, from that head of the whole Latin Church. In countries that embraced the Latin creed, or harboured its monastic orders, and thus became religious vassals of

the Pope, and professed allegiance to him, the erection of new churches and monasteries was in a manner to raise new estates to the Pope himself.

"The masons could be regarded only as different troops of labourers working in the cause of the Pope, as much as the missionaries who were sent before to collect business for them; and thus they obtained the requisite powers, probably, soon after Charlemagne had put an end to the kingdom of Lombardy, and the fears of the Popes from that quarter, by annexing those dominions to his empire. They were fraught with papal bulls, or diplomas, not only confirming the corporate powers given to them by their own native sovereign, on their own native soil, but granting to them, in every other foreign country which they might visit for purposes connected with their association, where the Latin creed was avowed, and the supremacy of its spiritual head acknowledged, the right of holding, directly and solely under the Pope alone, entire exemption from all local laws and statutes, edicts of the sovereign, or municipal regulations, whether with regard to the force of labour, or any other, binding upon the native subjects: they acquired the power, not only themselves to fix the price of their labour, but to regulate whatever else might appertain to their own internal government, exclusively in their own general chapters; prohibiting all native artists not admitted into their society from entering with it into any sort of competition, and all native sovereigns from supporting their subjects in such rebellion against the church, and commanding all such temporal subjects to respect these credentials, and to obey these mandates, under pain of excommunication; the whole ending in a justification or sanction of the arbitrary proceedings, by the ancient example of Hiram, King of Tyre, when he sent architects to King Solomon, to build his temple.

(To be continued.)

ART. III. 1. *A Collection of the most approved Examples of Doorways, from Ancient Buildings in Greece and Italy, expressly measured and delineated for this Work; preceded by an Essay on Usages of the Ancients respecting Doorways; a new Translation of the Chapter of Vitruvius on the Subject, with the original Text, taken from an ancient and valuable MS. in the British Museum; and copious Descriptions of the Plates.* By Thomas Leverton Donaldson, Architect, Member of the Academy of St. Luke at Rome; Corresponding Member of the Academies of Fine Arts at Venice and Milan, and Academic Professor of the First Class of the Academy at Florence; Author of the Folio Volume on Pompeii, Contributor to the Supplementary Volume of the Antiquities of Athens, &c. 4to, 47 pages of letterpress, and 25 plates. London, 1833.

2. *A Collection of the most approved Examples of Doorways, from Modern Buildings in Italy and Sicily, expressly measured and delineated for this Work; preceded by a Sketch of the History of Italian Architecture from its Revival to the Time of Palladio.* By Thomas Leverton Donaldson, Esq., Architect; Honorary Secretary of the Institute of British Architects; Corresponding Member in the Class of the Fine Arts of the Institute of France; Member of the Société libre des Beaux Arts at Paris; of the Academies of Fine Arts at Rome, Venice, Milan, Florence, and of the Archæological Institute of Rome; Contributor to the Supplementary Volume of the Antiquities of Athens; Author of the folio Work on Pompeii,

and of various other Works. 4to, 22 pages of letterpress, and 30 plates. London, 1836.

THESE are most learned and elaborate volumes, and indicate in their author a mind thoroughly imbued at once with a knowledge and a love of his art. If we had not the evidence of Mr. Donaldson's publications in proof of this conclusion, we might point to the high honours which have been conferred upon him by foreign societies, and more especially by the Institute of France; and to the circumstance of his having been appointed the Honorary Secretary of the Institute of British Architects.

Though we do not anticipate much direct influence from the study of the classical remains of antiquity on modern architecture, yet we are decidedly of opinion, that every artist ought, as far as he can, to make himself acquainted with all that has been done in his art. The great misfortune is, that this kind of knowledge has, hitherto at least, had the effect of contracting the mind, rather than of enlarging it; and of leading the artist to rely rather on precedent, than on his own genius. Hence the much greater number of bigots that we have in architecture, than of men of original powers of mind. Architecture, as an art of utility, must necessarily vary with the degree of civilisation that the country in which it is to be practised has attained; and, as buildings ought exteriorly to be expressive of the purpose to which their interior is to be applied, it follows, from the extreme difference that exists between ancient and modern habits and manners, public as well as private, that but in few instances fac-simile imitations of the edifices of antiquity can be admissible in modern times. The man of genius, as well as the man of mediocrity, will alike have his stock of ideas increased by the study of the remains of antiquity: but while to the one they will form materials which his own talents will amalgamate so as to produce entirely new combinations; the other, whose mind is not sufficiently powerful and comprehensive to make what he learns his own, and who can only copy what he sees, will derive no other advantage than that of having the number of his precedents increased. He will still be an idolator, but with a greater number of false gods. But whichever way the study of antiquity operates, the more this study is extended among architects the better; because, by the results being rendered more decided and conspicuous, the value of the study will be more correctly ascertained. In this view, therefore, independently of every other, we cordially hail the appearance of Mr. Donaldson's volumes, as embodying all that has been done by the Greeks, Romans, and Italians, on the important subject of doors. We shall now glance at the letterpress and the plates of the first volume, and defer our notice of the second till our succeeding Number.

In the preface to the volume published in 1833, the author

observes, that "Doorways are so material a feature in every edifice, so much may the majesty and importance of public buildings, and the beauty and convenience of private dwellings, be improved or deteriorated by the judicious or inelegant arrangement of the door, that it is to be hoped these will be considered sufficient reasons for the attention which it is proposed to bestow upon the subject. If from the mouth the human countenance derives beauty and expression, so does a façade become appropriate and graceful from the proper allocation of the door; the primary object, to which every other is subordinate. A strong argument is, also, to be derived from the intrinsic merits of the doors themselves, which, as the work will prove, concentrated almost every attraction of architecture, and possessed so many beauties in themselves, as to increase our admiration for the inexhaustible resources of the ancients."

In order more completely to illustrate the subject, a chapter is given on the customs and usages of the ancients, as connected with doorways; a second contains the text of Vitruvius on the same subject, with a translation and comments; and the third describes the plates.

Chap. I. *Usages of the Ancients as connected with Doorways.* The ancients supposed Janus to preside over doors; and hence the word *Janua*, a gate. When a temple was dedicated, the priest grasped the door-post with his hand. The sill of the door was held in particular reverence by the pagans, and was frequently kissed by those entering or departing. It was considered unlucky to tread with the left foot upon the sill; and hence Vitruvius limits the number of steps to the door of a temple or house in such a manner, that those who enter should tread on the sill with the right foot. To the doors of both public and private buildings, arms, spoils, and military rewards were sometimes affixed. Crowns and festoons of flowers were suspended both from the doors of public and private buildings in times of public or private festivity or grief. The Athenians marked the presence of death in a dwelling by putting before the door a lustral vase full of water. The Romans indicated the presence of a corpse in a house by placing a branch of cypress at the door; and visions and hobgoblins were supposed to be kept away by a nail being taken away from the sepulchres, and driven into the door-post, or sill. A similar prejudice exists in Britain, and, we believe, in some parts of the Continent, respecting the efficacy of an old horseshoe. The Jews still stain the lintel and two side-posts of the door with blood sprinkled on them with a bunch of hyssop, during the Passover, agreeably to the precept in Exodus, chap. xii. The Greeks anciently opened their doors outwards towards the street; but the Romans opened them inwards. On the doors, jambs, and lintels, both of the Greeks and Romans, words and sentences were frequently inscribed,

describing the nature of the place, the pursuits of the occupier, or impressing some maxim on the mind of the beholder; hence the well-known and often quoted line: —

“Lasciate ogni speranza, voi ch' entrate.”
Leave every hope, ye who enter here.

The care of the door was, among the Greeks and Romans, confided to a slave, who was summoned to open it by striking the door with a knocker, as in modern times. The duties of this slave, or janitor, as he was called, also extended to keeping up the sacred fires and lamps before the images; and he was generally attended by a dog or two, to assist in guarding the door. A dog was painted on the wall, with the words “*Cave canem*” (Beware of the dog) inscribed beneath; a practice to which the reader will be in no difficulty of finding a parallel in modern times in the suburbs of great towns, not as a substitute for a porter, but to protect gardens and orchards. Homer describes the gardens of Alcinoüs as having folding doors, and two rows of stately dogs, sculptured in gold and silver, standing on each side as guards. “Some writers suppose that the Greeks derived many of their customs from the Egyptians; and this opinion seems to acquire force from a practice of that people similar to the one just noticed, many of their temples being approached through long avenues of sphinxes, placed there as guardians of the entrance leading to these superb fanes.”

“But, cautious as were the ancients to protect their threshold, by every possible precaution, from the depredation of midnight robbers, or the impertinent intrusion of unwelcome visitors, they were no less anxious to receive their friends and relations with every demonstration of welcome. The hospitable salutation of *Salve*, inscribed on the wall, traced in mosaic on the sill itself, or worked on the pavement immediately within the porch, offered a propitious omen to those whom they held in particular regard. Frequent instances of this custom occur in the houses of Pompeii; a city rich in these memorials of the domestic habits of the ancients, and affording the antiquary a fruitful source, from which he may derive a greater intimacy with the common usages of life, and a greater insight into the customs of the ancients recorded in their writings, than in any other remains of antiquity.

“The most unpretending decorations to the door prevailed during the earliest periods of Grecian and Roman simplicity of manners. The plainest arrangement of the posts, or, at most, two antæ, executed in the common wood or stone of the country, was all that the citizen, most distinguished for his wealth, dared assume. A regard for the primitive habits of his countrymen, a respect for the temples of the gods, forbade his aiming at a

greater distinction above his fellow-citizens, by vying in splendour of arrangements, or costliness of material, with the sacred edifices. These feelings, however, soon yielded to the influence of the introduction of eastern magnificence, and the vast wealth accumulated by the prætors of the several provinces. Lepidus is stated, not without reproach, to have been the first who introduced dressings of Numidian marble in his doorway; and Pliny (l. xxxix. c. 3.) mentions Camillus, as having been subject to the severe animadversion of the censor Sp. Corvilius, for having bronze jambs to his porch." (p. 7.)

The doors of temples were generally constructed of the same material as the temple; but sometimes of more costly articles. No bounds were set to the enrichment of doorways by metals, and by painted and sculptured ornaments. "A minute examination of the doors to the Temple of Minerva and the Propylea in the Acropolis at Athens, and to the Sicilian temples, left no doubt upon the mind of the author, that they were decorated with metal jambs of the most precious materials, and, doubtless, of the most exquisite workmanship. It is impossible to omit noticing the stupendous doors, given in the work of R. Wood, and which remain among the gigantic ruins of Balbec and the sandy plains of Palmyra: not that they can be cited for their graceful proportions, or purity of style. They evidently belong to that period of art, during the reign of the Antonines, when architecture sought its attractions in novelty and profuse decoration, rather than in proportion and chaste ornament. Still, their overpowering size, having lintels of a single block, of more than 20 ft. span, and antepagments of twice that length, the dazzling accumulation of enrichment, and multiplicity of the parts, bewilder the spectator, and leave on his mind a painful impression of extravagance. All these doors are of the Corinthian order, with very broad architraves, consoles, and cornices, crowded with every member of the order: hardly a single fascia is left devoid of ornament; and the frieze is generally filled with a rich and flowing scroll: thus the eye, fatigued with such profusion, seeks in vain for contrast or repose. The door at Spoleti, illustrated by Serlio, and those given by Pococke and Tournefort, can only be alluded to as proving the accumulation of ornament, to the exclusion of good taste, which the ancients bestowed upon their doors during the middle empire." (p. 7, 8.)

Having thus noticed the fixed dressings of doors, Mr. Donaldson next proceeds to consider the inner part, which opened, and which the Romans called "*fores*" and "*valvæ*;" the latter being those that consisted of two or more leaves. It is uncertain whether the Romans had half, or dwarf, doors, such as are common in many cottages in Britain, more especially in Scotland; but it is very probable they had, as, in Mr. Donaldson's

Pompeii, vol. ii. p. 24., a door is described as 3 ft. high; and the utility of such doors in shops and ordinary buildings, by excluding animals and children, and yet admitting air and light, must have been felt, at all periods, so strongly, as to have led to their early adoption. Cicero complains of the sumptuousness of Verres, in having his doors highly finished with gold and ivory.

The hinges of the oldest doors were made of wood, elm being considered the best; and, when a person wished to enter a door unheard, he took the precaution of previously throwing water upon the wooden hinges, which prevented their creaking. Hinges were also made of brass; and those of the hanging leaf turned upon a pivot at top and bottom; the pivot being inserted in the ends of the hanging stile. Hinges which connected leaves, folding back on each other, were formed of flat plates, like the strap hinges of the present day.

It is uncertain when keys were first used. In Homer's time, cords, knotted, and "closed with Circæan art," were the only modes of securing treasure. A proof of the esteem in which the ancients held the making of knots, not easily unfastened, may be adduced from the Gordian knot, so famous in antiquity.

Ulysses is represented, in the *Odyssey*, Book viii., as securing the valuable presents of Alcinoüs and his queen merely by a cord intricately knotted. "This, of course, was soon found to be a very insufficient protection; and, therefore, a wooden bar was adopted inside the doors of houses, to which it was attached by an iron latch, fastened or removed by a key adapted to it. This key was easily applied from within; but, in order to get at it from without, a large hole was made in the door, allowing the introduction of the hand, so as to reach the latch, and apply the key." (p. 10.) •

"The lock, called the Lacedemonian, much celebrated by ancient writers, was invented subsequently: it was especially fitted for the inner chambers of houses; the bar fastenings continuing to be employed for closing the outer doors of dwellings, and the entrance gates to cities. The Lacedemonian lock did not require a hole to be made in the door, for it consisted of a bolt placed in that side of the entrance-door which opened, and on the inside of a chamber door. When a person, who was outside, wished to enter, it was necessary for him to insert the key in a little hole, and so to raise the bolt; and, in time, this species of fastening was improved by the insertion of the bolt in an iron frame, or rim, permanently attached to the door by a chain, and fastening the door by the insertion of the hasp, through the eye of which was forced the bolt inside the lock, by applying the key. Hence Varro observes: 'Nec satis reserare ab sera dictum, id est aperire. Hinc etiam seræ quibus remotis fores panduntur.' And Nonius in *Patibulum* says: 'Sera sua sponte delapsa cecidit, reclusæque subito fores admiserunt intrantem.' Thus it appears that the locks of the ancients were not of the same construction as ours, not being inserted, or morticed, into the doors; nor even attached, except by a chain, and being, in fact, mere padlocks." (p. 10.) "Lipsius, in his comments on the second book of *Tacitus*, is the first to allude to the ancient usages respecting keys; some of which he states to have had a ring the size of the little finger, for the purpose of being worn, and engraved so

as to answer the purpose of a seal." The bolts (pessuli) were generally two to each door; as in *Plautus* we find the expression, "Ostium ambobus occlude pessulis" (*Aulularia*); for which reason the ancients generally use this word in the plural number. (p. 10.)

Chapter II. contains "the original text of that part of the fourth book of Vitruvius on architecture, relating to doorways, commonly called the Sixth Chapter; taken from the Harleian Manuscript No. 2767., in the library of the British Museum, revised and compared with various other codices, and the generally received printed text, and accompanied by a translation and comments; preceded by a description of the MSS. of Vitruvius existing in the library of the British Museum, and in the libraries at Oxford; and followed by a glossary of the Greek and Latin terms, relating to doorways, used by ancient authors." A great deal of learning and research is displayed in this chapter, which will amply repay the classical reader and architectural antiquary for its perusal.

Chapter III. contains a description of the plates, which are as follows : — I. Doorway from the portico of the Caryatides, Athens. II. Doorway at Cephalædium, Sicily. III. Doorway at Pompeii. IV. Details of the two preceding doors. V. Doorway from the Trajan column, Rome. VI. and VII. Doorways from Piranesi, according to an antique inscription. VIII. From an antique alto-relievo. IX. Doorway from the portico of Eumachia; Pompeii. X. Doorway from Cephalædium, Sicily. XI. Doorway at Agrigentum, Sicily. XII. Doorway from Cephalædium, Sicily. XIII. Details of the preceding plates. XIV. Door to the tomb of Theron at Agrigentum. XV. Doorway from the Temple of Vesta, at Tivoli. XVI. Details of the two preceding doorways. XVII. Doorway to the Pantheon at Rome. XVIII. and XIX. Details of the Pantheon doorway. XX. Bronze door from the Temple of Remus, Rome. XXI. Doorway from the Temple of Hercules, at Cora. XXII. Details of the doorway to the temple at Cora. XXIII. Doorway to the tetrastyle Ionic portico, Acropolis, Athens. XXIV. and XXV. Details of the preceding doorway.

The plates are most beautifully executed; and, from the large scale to which they are drawn, and the numerous details and dimensions that accompany them, they cannot fail to be of the greatest use to every architect, builder, and carpenter.

MISCELLANEOUS INTELLIGENCE.

ART. I. Foreign Notices.

FRANCE.

THE Count de Laplace. — A monument has been raised to this great man at Beaumont, and placed on the site of the house where he was born. It is a building erected for the purposes of a primary school, and a hall for the Mayoralty. Two tablets of marble are inserted in the front of the building: on one it is recorded, that the corporation of Beaumont had erected this edifice to the memory of Laplace, who was born at Beaumont, the 22d of March, 1749; and died at Paris the 5th of March, 1827. On the other is inscribed the following : —

"Sous un modeste toit, ici naquit Laplace,
Lui qui sut de Newton agrandir le compas;
Et, s'ouvrant un sillon dans les champs de l'espace,
Y fit encore un nouveau pas."

(*Athenæum*, December 19. 1835.)

Improvements and Embellishments in Paris.— The granite for the pedestal of the obelisk of Luxor has arrived, and only awaits the decrease of the waters of the Seine to be landed. It consists of seven blocks, one of which weighs 120,000 pounds. (*Paris Advertiser*, quoted in *Lit. Gaz.*, January 23. 1836.)

The Hôtel Dieu, it is said, will shortly be taken down, to carry on the beautiful line of quays which extend along each bank of the Seine. The sick will be removed to the Invalides; which establishment will be broken up, and formed into several branches, in various parts of the country, where articles of provision, &c., are cheap. (*Paris Advertiser*, quoted in *Lit. Gaz.*, January 23. 1836.)

NORTH AMERICA.

A new Theatre has just been completed at New Orleans, in size equal to Drury Lane Theatre; and was opened to the public on the 1st of December last year. — *N. P.*

A Building for a *Lycæum of Natural History* has been commenced at New York, of which plans, sections, elevations, and a specification have been sent us by our correspondent, Mr. Ross; and they will probably appear in some future Number. Very serious injury, it appears, has been done by the late fire to the Exchange, and other stone buildings, though not nearly so much so to those few that were built of brick. The stone, it will be recollected, is almost entirely calcareous, and chiefly a white or greyish marble.

ART. II. Domestic Notices.

ENGLAND.

THE Decision of the Commissioners respecting the Designs for the new Houses of Parliament, to which the Prizes were awarded.— We are exceedingly glad to see this subject taken up in the spirited manner that it has been by the London architects. Whatever may be the result, the discussion will be sure to do good. Every one seems agreed that Mr. Barry's design is the best, though it may have faults; but the public voice seems to be equally unanimous, that there are a number of designs better deserving the second, third, and fourth premiums, than those to which they have been awarded by the commissioners. The real truth, probably, is, that the commissioners, though they had tact enough to discover that Mr. Barry's design was by far the best, yet had not leisure, or patience, to attempt the Herculean task of examining all the remaining ninety-three designs with sufficient care to form a correct estimate of their merits. In all commissions of this kind, we certainly think the assistance of professional men ought to be called in; just as lawyers are called in to give their opinion on particular points in cases of arbitration. If we only reflect for a moment on the time required to examine all the drawings now exhibited in the National Gallery, so as to form even a tolerable notion of them, much more a correct judgment of their different merits, we shall at once be able to imagine the very difficult task which the commissioners had to perform. We question even if they had the requisite room to enable them to examine all the drawings properly, so as to compare them with each other, and to decide accurately on the individual and relative merits of each, in such a manner as to enable them to select three (besides Mr. Barry's, with which, we readily allow, there could be no difficulty) out of the mass, each of which should be superior to ninety others! The task is almost superhuman! To arrive at anything at all like a satisfactory conclusion, the drawings must have been spread out at the same time; not, as in the National Gallery, at different distances from the eye, but all at the same distance, or so as to admit of being viewed at the same distance. Without having the principal ground plans and

elevations simultaneously spread out in this way, we do not see how it was possible for the most competent judges to arrive at such a decision as would even satisfy their own minds.

We do not suppose the architects will be able to induce government to reverse the decision of the commissioners; but we think they do well to agitate the subject to the utmost of their power; and, as we wish to render them every assistance in doing so that we can, we print the following resolutions; and add that a petition founded on, and embodying them, has been presented to both Houses of Parliament. From the few words of discussion which passed on that occasion, it appears that nothing can be finally determined on till Mr. Barry's estimates of the expense are produced; which is not likely to be the case during the present session.

"At a Public Meeting of the Exhibitors of the Designs for the new Houses of Parliament, held at the Thatched House Tavern, St. James's Street, June 7. 1836, C. R. Cockerell, Esq., in the chair, The following resolutions were resolved:—

"1. That the designs of the successful competitors for the building of the Parliament Houses and offices having been exhibited, together with the other designs, during six weeks, the selection of the commissioners has not received that approbation and confirmation from the public which a commission appointed by His Majesty for this object was expected to have elicited; but, on the contrary, judging from the expression of general opinion, and of the public press, the commissioners have failed to produce that result which the just expectation of the public, and of the competing architects, who have made great efforts in furtherance of this important national work, was prepared to see realised.

"2. That the architects themselves, however ready to acknowledge the professional talents displayed by the successful competitor, cannot admit that the selection of those to whom the prizes have been awarded has been made with due regard to the merits of the others; and that they are prepared to particularise their objections.

"3. That the incompetency of the commissioners, being amateur gentlemen, unassisted by scientific knowledge or professional advice, is apparent in the selections made, and in the admission contained in their own report; and that a final judgment on so grave a subject, without scientific advice and professional knowledge, is without precedent in an enlightened country.

"4. That this meeting do therefore resolve to present an humble petition to Parliament, to be heard at the bar of the Houses, in proof of the allegations contained in the petition, praying that Parliament will recommend to His Majesty the appointment of a competent commission to revise the whole of the proceedings, in order that the competing architects may no longer suffer under an incompetent decision, nor the country be deprived of the advantages which it ought to derive from a competition in which a great portion of the architectural talent of the United Kingdom has taken part.

"5. That the architects adopt this course in consideration of what is due, in their opinion, to public justice and themselves, the profession of the arts, and to the country, in reference to a question so greatly affecting its present and future reputation.

"6. That the unanimous thanks of this meeting be given to the chairman, for his zealous aid and able conduct in the chair."

The annual Distribution of the Prizes by the Society for the Encouragement of Arts, Manufactures, &c., was attended by Professor Raumer; and we give the following extract from his observations on it, because we think it is always useful to be able to know the state that we are in relatively to other nations, whether in regard to the arts of use or of ornament. "After a number of prizes for improvements and inventions in agriculture, mechanics, chemistry, &c., had been distributed, it came to the turn of the arts; and I now discovered why the female portion of the company was even larger than usual. Ladies of various ages received prizes (silver and gold medals) for original drawings and paintings. The gallant distributor took infinite pains to say something obliging to each; and these compliments were received with great applause by the male part of the audience. My curiosity was excited; and I went down from the platform, to obtain a view of the works of art hung in front of it. And what did I see? The very worst thing in our exhibitions is superior to the best here; and the little dogs, and cats, and heads, and flowers, would not have done much credit to a drawing-school. One of your drawings, dear, would have driven the whole troop of medaled ladies out of the field." (Raumer's *England*, as quoted in *Lit. Gaz.*, March 26. 1836.)

Chantrey's Sculpture.—In a preceding page, we gave the opinion of Professor Raumer on Buckingham Palace; and we shall now make an extract from his *England* in 1835, which has just been published, on the subject of our sculpture. We request the architectural reader to bear in mind, while perusing it, the difference which we have stated to exist in architecture, in landscape-gardening, and in every elegant art, between fac-simile, or commonplace, imitations of nature, and artistical, or poetical, imitations.

"Yesterday, after breakfasting with Mr. M., the son, we visited the studio of the celebrated sculptor, Chantrey. If I compare his works with those of his predecessors, it is impossible not to perceive (as I remarked in my letter on Westminster Abbey) an amazing advance; a return from affectation, exaggeration, and absurdity, to the simplicity of nature: to human attitudes, and to the repose which sculpture demands. But this return to nature is only the indispensable preliminary condition, and not the highest aim of art. By far the greater number of Chantrey's works are busts, or portrait statues (remarkable, as I am assured, for the perfection of the resemblance), and sepulchral monuments, generally conceived with a view to the same end. But I see in these heads merely the faithful impression and imitation of nature; not the poetical and artistical idealisation, which nobody can fail to be struck with in the great masters. Likeness portrait is, and must ever be, something one-sided, subordinate, dependent in art. Men like Lysippus, Raphael, and Titian, had the power of breaking down and obliterating the barriers which separate the real from the ideal, imitation from creation, and of purifying the given form from all dross, in the refining fire of their genius. If you compare Titian's Charles V., and Adamberger's Charles V., you will have a clear conception of what I mean, of what I looked for, and did not find. In the whole-length statues of heroes, statesmen, &c., I found, not, indeed, the defects of the last age, but a certain pervading monotony of the attitude, the station, the draperies, which made me doubt whether I might venture to conclude with certainty that the work gave the precise individuality of the man; a doubt which cannot by possibility occur to any body who looks at Rauch's *Blücher Scharnhorst*. All Chantrey's works lie on this side the line, beyond which lay the whole regions of art among the Greeks; at which beauty of form, and the ideal (in the true sense of the word), appear as the proper scope of art: the true object of the genial artist. Canova may have his defects; but he attempted to create a Paris, a Perseus, a Venus, and Graces. I do not mention the creations of the German masters. Rauch's two queens far surpass, both in conception and execution, all that I saw in that style at Chantrey's. As to works whose exclusive aim is the revelation of that beauty with which the soul of every artist should be filled, — it were idle to hope that such can ever be produced in a country where the time and thoughts of a popular artist are engrossed by commissions of a very different character." (*Raumer's England*, as quoted in *Lit. Gaz.*, March 26, 1836.)

Railroad to India. — Long before ten years more, I trust to see a regular communication, in 45 days, between England and India, in every month of the year, established on a permanent and well-organised footing. That the communication can be accomplished in 45 days is beyond a doubt, even allowing nine days for the several necessary stoppages. (*Mr. Waghorn, in a letter dated Alexandria, April 7., published in the Morning Chronicle of May 11.*)

A Public Monument, in preference to a Station-House. — A meeting was lately held in the neighbourhood of Sloane Street, to adopt proceedings to prevent the erection of a station-house on the ground forming the angle between the Great Western and Brompton roads, which is considered an eligible point for a public monument, or other ornamental work. Mr. G. Davies of Queen's Buildings, Brompton, was in the chair. The meeting was numerous and respectably attended; and it was resolved to address Lord John Russell on the subject without delay. (*Morning Chronicle*, March 23.) This spirited conduct deserves the highest praise; and we should like to see it imitated, not only throughout the metropolis and its suburbs, but all over the country. There are many points of junction between main roads that would form fine situations for monuments to public characters, or commemorative of important events. On the top of Hampstead Hill, for example, a tower might be built; and its interior might contain busts of the principal great men who had been born within the circumference seen from the summit of the tower.

St. James's Park. — A new Military Chapel is being erected on the south side of St. James's Park, and near to the Military College on the same side. The principal front will be in cement. The roof, which is a queen-post, is now being prepared, and will, in the course of a few weeks, be placed on the building, and covered in. — *Tyro. Wilmington Square, May 3. 1836.*

New Music Hall. — A company for the establishment of a Music Hall is now being formed. The principal object the company has in view is, the erection of a building, containing a magnificent hall for musical festivals, of a size sufficient to accommodate 6000 persons, and an orchestra of 1200 performers; with concert rooms of various dimensions, and a library of music, and musical literature. A treaty has been made for the purchase of a site for the erection of the building. — *Id.*

Burlington Hotel, Piccadilly. — An addition to the Burlington Hotel, situated in Cork Street, Old Bond Street, Piccadilly, is now being made. It is a new building having a front as wide as the hotel. The front is to be in cement, with cornices between the stories, architrave mouldings round the windows, &c. The interior finishings are now being completed. — *Id.*

The London Cemetery Company. — A new company, with this title, to be incorporated by act of parliament, and having for its object the immediate formation of three cemeteries, in the northern, southern, and eastern districts of the metropolis, is being established. Stephen Geary, Esq., is the architect employed; and the capital required to carry the project into execution is 80,000*l.* — *Id.*

The South Metropolitan Cemetery Company is now forming. An eligible plot of ground, pleasantly situated, has been selected. The architect under whose direction the ground is to be laid out is William Tite, Esq.; and the capital required is 75,000*l.* — *Id.*

The Sailors' House, or Brunswick Maritime Establishment, has lately been built on the site of the late Brunswick Theatre, in Well Street, near the London Docks, and in the Grecian style of architecture, from the designs and under the superintendence of Philip Hardwick, Esq. The building is covered in, and some of the rooms are finished; the expenses of which have amounted to 2130*l.* 9*s.* 5½*d.*; and for the remaining part, including composing the front, and finishing the remaining rooms, subscriptions are earnestly solicited. The length of the building is 116 ft., and the breadth 66 ft. — *Id.*

Belgrave New Literary and Scientific Institution. — A new building for the members of this institution is in contemplation, to be erected adjoining the Pantechicon, in Belgrave Square. The rooms the members now occupy are situated in Sloane Street, Knightsbridge. The theatre for the delivery of lectures will not hold more than from 150 to 200 persons; while the present number of members is between 200 and 300. — *Id.*

British Museum. — With the exception of the interior finishings, the northern side of the British Museum is completed; and when the interior of this part is finished, the temporary communication on the western side to the Elgin Marble room, &c., will be removed, and made to correspond with the eastern side. It will be a few years before the old southern front, and the buildings round the entrance court-yard are taken down; but when they are removed, and the new buildings completed, the British Museum will be one of the most elegant architectural edifices, in the Grecian style of architecture, in the metropolis. The architect to the new buildings is Sir Robert Smirke. — *Id.*

Islington. — A new parochial school is to be erected in the southern part of Islington, from the designs of Mr. Wright, a student of the Royal Academy, assisted by Mr. Johnson, clerk of the works to many public buildings. These gentlemen obtained a premium of 20*l.* for the best design out of one and twenty sent in. The piece of ground which has been purchased for the purpose is 80 ft. square. The school is to be in the Grecian style of architecture; and the various works, which are to cost 1500*l.*, are to be under the superintendence of Mr. C. H. Hill, architect, Islington. — *Id.*

Southwark. — A plain and neat iron railing has just been put up, enclosing the front of the Ladye Chapel, Southwark. — *Tyro. Wilmington Square.*

A new Church at Bermondsey, in the pointed style of architecture, has recently been completed. This new building is at present completely lost, being hemmed in on three sides: the only entrance is by a small porch attached to the side next the road. — *Id.*

A new Chapel, in the Grecian style of architecture, has just been completed: it is situated near Rochester Row, in the parish of St. Margaret, Westminster; and opposite to a row of almshouses, founded in 1708, by Mr. Emery Hill. — *Id.*

Street Architecture. — An excellent specimen of the Grecian style, as applied to street architecture, is being completed a little beyond Temple Bar, on the Strand side, and adjoining Messrs. Twinings' tea warehouse. — *Id.*

Globe Insurance Office, Pall Mall. — The Globe Insurance Office, in Pall Mall, is being rebuilt: the front is to be in imitation stone; and, when completed, it is expected to vie with the recent improvements in the same street. — *Id.*

Cambridgeshire. Chesterton. — A new workhouse is to be erected at Chesterton. In this instance, architects were solicited to forward designs; but only seven days were allowed for preparing them. — *Id.*

Herefordshire. — A new Catholic chapel, in the Grecian style of architecture, is now being erected at Hereford. — *Id.*

Kent. Gravesend. — The Town Hall at Gravesend is now closed, for the purpose of having certain necessary alterations and additions made to it. It is also to be generally repaired. — *Id.*

Worcestershire. Upton upon Severn. — A new church is being erected at Upton. The first stone was laid on the 9th of May last, by Prince George of Cambridge. — *Id.*

Suffolk. Bury St. Edmund's. — A lecture on historical architecture, illustrated by very many beautiful transparent drawings, was delivered in the Mechanics' Institute, by Mr. Heigham, on January 14. A correspondent informs us, that the subject was rendered by Mr. Heigham extremely interesting, and that the drawings produced an excellent effect. We observe by the newspapers, that lectures on architecture are becoming not unfrequent at Mechanics' Institutions throughout the country; a striking evidence of the progress of a taste for this art, which we are extremely glad to witness. At Liverpool, our correspondent, Mr. Picton, has lately delivered a course of lectures, which excited great interest, and of which we have received a report, as published in a Liverpool newspaper, which, when we can find room, will be well worthy of a place in this Magazine. We observe that, at some Mechanics' Institutions, lectures on Taste are occasionally given; and this we are still more happy to see than even lectures on architecture. There is scarcely any subject better calculated to humanise and refine the individual, than the study of the principles of beauty in the works of nature and art; and the different modes of expressing that beauty, by the different arts of taste, or, as they are called, fine arts. A knowledge of the principles of beauty has an immediate tendency to liberalise the mind, by freeing it from the notion, almost universally prevalent among those who have not studied the subject, that in each particular class of objects there is only one form that is truly beautiful; or, in other words, that beauty is an absolute and independent quality in objects, instead of merely a relative quality. Hence there is scarcely an object, either in nature or art, that is not beautiful when taken in connexion with some circumstance in its history, locality, or use. To give a familiar example: a man may say that an Arabian courser is a much handsomer horse than a Suffolk Punch, or a greyhound a much handsomer animal than a pig; and we will allow this to be the case, if the standard of reference is made from some beau ideal combination of lines and forms, which belongs to the higher works of nature and art; but, if we take utility as the

standard, and examine these animals relatively to their respective uses, they will be found equally beautiful, though in different ways.

Sudbury.—A new workhouse, from the designs and to be under the direction of Mr. John Brown, architect of Norwich, is to be immediately erected at Sudbury, and to contain 400 paupers. The various works have been contracted for. — *Tyro. Wilmington Square.*

Surrey. Chertsey.—A new workhouse, from the designs and under the superintendence of Sampson Kempthorne, Esq., is in course of erection at Chertsey. The various works have been put to contract. — *Id.*

Richmond.—A group of almshouses, in the old English style of architecture, pleasantly situated on a retired spot, and near to the town of Richmond, have recently been completed. — *Id.*

Titchhurst.—A new workhouse, from the designs and to be under the superintendence of Sampson Kempthorne, Esq., is to be erected at Titchhurst. The various works have also been put to contract. — *Id.*

Sussex. Hastings.—A company has recently been formed, entitled the "Hastings Improvement Company;" having for its object the immediate erection of a new square, with a crescent and terrace, to be built from the designs and under the superintendence of Lewis Vulliamy, Esq., architect, at Warriors' Gate, in the Valley of Gensing, Hastings. — *Id.*

A new Road from John's Cross to Battle, in the county of Sussex, is to be immediately proceeded with; to be under the direction of Mr. Brown, engineer. — *Id.*

ART. III. Retrospective Criticism.

THE Bank and the new Post-Office.—A portion of the iron railing enclosing the circular corner of the Bank, facing Coleman Street, is to be taken down, for the purpose of obtaining a more direct line of road from Prince's Street to the new street now forming; and, as the removal of the railing will expose Sir John Soane's ornamental corner to the passengers, a forest of spikes is being placed on the stylobate between the columns, which will be a great disfigurement to the building, and render its appearance still more unsightly. The utility of the ornamental corner, or porch, as well as, on the sides, the blank windows; the drawing boards over them, breaking the architrave and frieze; with other nondescript architectural devices, I have been endeavouring for a considerable time to learn, but without success. I have always understood, that the only use of a porch was to shelter an entrance: but at this corner is no entrance; and, though there certainly is a false door, yet there is no flight of steps, or other way of ascending. You might have reached it (prior to the introduction of the spikes) by means of ladders, &c.; but, now the spikes are planted, even this cannot be accomplished. If Sir John Soane wished to make this part of the Bank ornamental, would not the introduction of a statue, or some ornament emblematical of the riches the Bank contains, have given the porch an appearance of utility, by way of shelter to the statue, or ornament? And, if a statue would not have been in character with the building, or adapted to the situation, why put a false door, with no steps or other way of getting to it?

With respect to the iron railing on the Lothbury side of the Bank, instead of removing part of it, would it not be a better plan to clear it away altogether? The general appearance of the street would be much improved by being widened; and its pretensions to uniformity would, also, be greater.

In the principal front of the new Post-Office is another instance where porticoes are introduced merely for the sake of ornament: at each end of the building is a portico having no entrance through it whatever. Taking the new Post-Office as a whole, it is a fine building, but it is much depreciated by the above-mentioned useless porticoes. — *Id.* May 6. 1836.

Nicholson's Principles of Architecture, 3d edition, 1827, 3 Vols. — In the third volume of this work occur some mistakes, which I have endeavoured to point out; so that, should a fourth edition of it be published, by the substitution of a few types, they might easily be corrected. If, also, any of your readers possess the work, and have not noticed the errors, a pen and ink, with a little care, will rectify them.

Page 18, Definition 16. "When the intercolumniation is three diameters of the columns, then it is called *decastyle*:" read "*diastyle*." And let the following, which has been omitted, form Definition No. 21.:—"When there are ten columns in one row, then it is called *decastyle*."

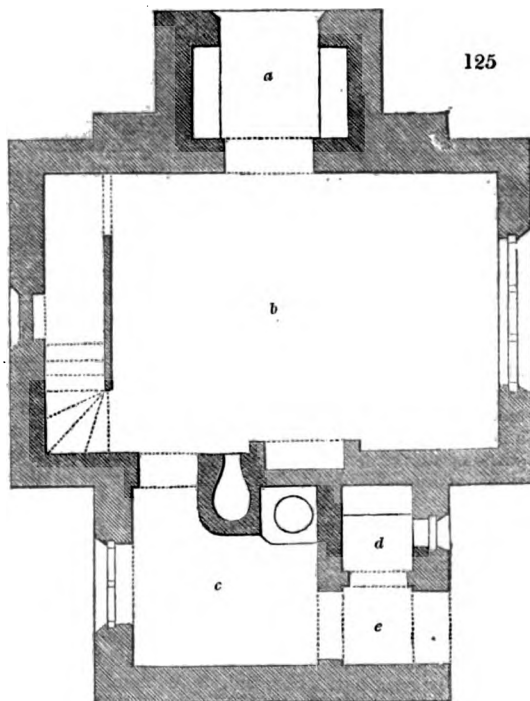
Page 25, Problem 1. "Divide the height of the frieze into eight parts; give the upper one to the capital of the triglyph, and the *three* lower for the channels, &c.:" read "the *seven* lower."

Page 28. "*Ictinus*" is stated to have been one of the architects of the Parthenon: read "*Ictinus*."

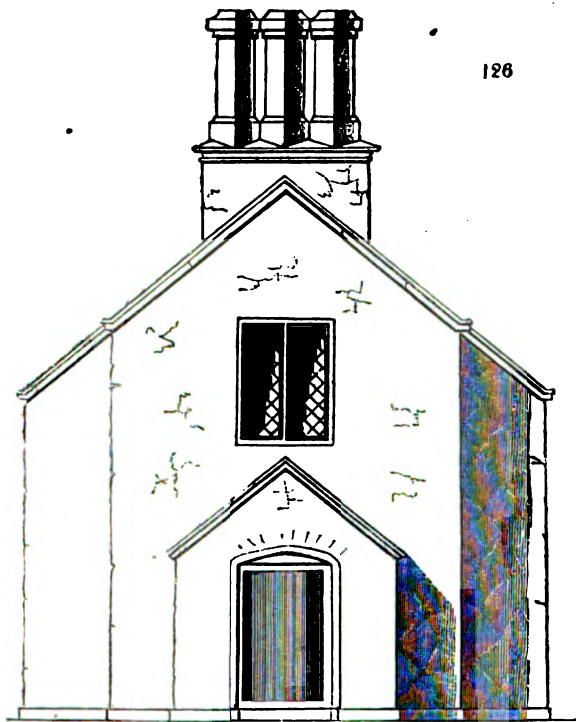
Page 89. Example 4. Read "Temple of Apollo *Didymæus*," and not *Dedymus*," as there stated.

Page 98, Definition 2. "An Order which has a Corinthian capital, and an Ionic or *any other entablature*, is called the Corinthian Order." There surely must be some mistake in this definition: I cannot imagine a column of the Corinthian Order, supporting a Grecian or Roman Doric entablature, being called the Corinthian Order. — *Tyro. Wilmington Square.*

Labourers' Cottages. — In the introduction to the *Architectural Magazine*, you invite your readers and contributors to instruct each other by criticising their respective designs. With this view I offer an opinion on Mr. Brigden's



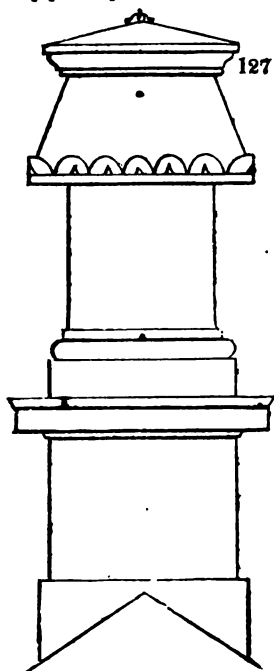
"Design for a Labourer's Cottage." (p. 120) This gentleman sets forth by stating, that "substantial convenience is what should be mainly looked at"



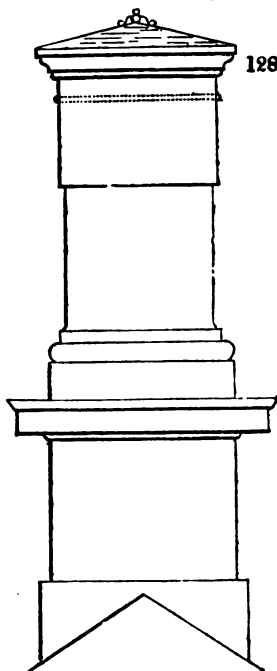
these structures." Now, I would ask him, how far he thinks it compatible with "substantial convenience" to have a privy out of the back kitchen, visible from the living-room when the doors are open, and shut up at night, to send forth its odours into the house? I would also ask him why a "wooden floor" would render the labourer's home more comfortable than a flagged or tiled one, which would be more easily washed, would dry more rapidly, and would not suffer from decay by its daily ablutions? And I would farther remind Mr. Bridgen that, in these days of agricultural distress, the labourer could hardly afford to pay 1*l.* 1*s.* a year for the luxury of having windows in his porch. Mr. Bridgen spares no expense in obtaining "substantial convenience:" he covers his building with a costly roof, and puts rafters on his porch 4 in. square, which latter have a bearing of about 4 ft.; he cogs his joists upon the plates, and surrounds with mitred margins the hearth-elabs of his cottage chamber; and yet his whole design, in my opinion, is tame and tasteless. He has eight windows, and yet his elevations show most awful blanks; and his chimneys, without a plinth, rise abruptly from their base, and present a most straggling appearance.

I send you two sketches (*figs.* 125 and 126.), showing certain alterations, which, I think, would add to the real comfort of this building; and, if the roof were carried on over the porch, to its economy. The elevation (*fig.* 126.), I think, also would not be inferior to that of Mr. Bridgen. I shall hope to have these sketches criticised by Mr. Bridgen, or any other correspondent, and have their errors pointed out. *Fig.* 126. is the front elevation; *fig.* 125. is the ground plan, in which *a* is the porch, with seats on two sides; *b*, the living-room; *c*, the scullery; *d*, the privy; and *e*, an open passage. — *A Young Architect.* *Liverpool, March 3. 1836.*

Chimney-Pipe for preventing Smoke. (Vol. II. p. 64.) — I was induced to try the pipe, or pot, recommended by T. W., for the cure of a smoky chimney;



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and, as I have had it but lately put up, I ought not to give an opinion as yet, upon its merits: but my present communication is to state my dislike to its general appearance, from its being so much like a trap baited to catch birds. Would the sketches (*figs.* 127, 128, 129, and 130) which I herewith submit to you be any improvement on T. W's. plan, as to efficiency and architectural effect?

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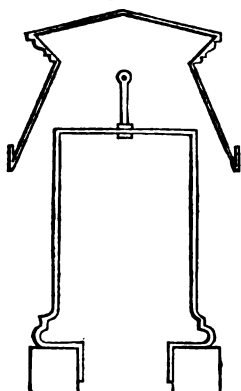


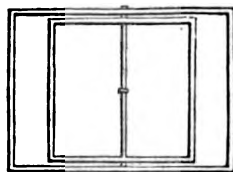
Fig. 127. is a representation of one side of the pipe and cowl. In fact, both elevations may be alike; in which case, the cap must be hung with a spindle to its centre, to allow its four sides to come occasionally in contact with the sides of the pipe, when acted upon by the wind.

Fig. 128. may be the other elevation if only two sides are intended for the escape of smoke.

Fig. 129. is a vertical section through the pipe and cap, showing the manner in which the latter is suspended.

Fig. 130. is a lateral section through the pipe and cap, showing the spindle, &c.

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Mr. Varden's plan of a chimney-pipe (Vol. II. p. 496.) is very good and simple; but it is subject to the same objection as T. W's. plan; namely, a want of architectural effect. — *Augustine. London, January 23. 1836.*

ART. IV. *Queries and Answers.*

Hior's Practical Treatise on the Construction of Chimneys (published in 1826), for the prevention of smoky chimneys, to supersede the necessity of climbing boys, &c. Can any of your readers inform me whether the plans laid down in this work for curing smoky chimneys have ever been adopted, and with what success? — Tyro. *Wilmington Square, May 2. 1836.*

City Improvements. — Will any of your readers be kind enough to give me a little information as to the intention of the City in pulling down so many houses on the left-hand side of Prince's Street, facing the Mansion House? — *Id.*

A Painting-Room. (p. 96.) — In the first place, the artist asks, "If a structure, such as is described, of timber-framing, lathed and plastered inside (the timber, I suppose, filled in with brickwork), and covered with cement outside, will last ten years." In my opinion, it will last, not merely ten years, but fifty years, if the timber is good sound Baltic fir; but I do not understand what is meant by a double frame, unless it means the quarter carcase framing outside, and quarter battening inside.

Secondly: as to leaving in repair; unless there is a covenant in the lease exempting any building erected by you (one not at all usual), you will be liable to make good all dilapidations suffered to accrue to this new building, the same as to any other part of the premises.

Thirdly: the insurance will be considered as hazardous.

Fourthly: with regard to the last question; the difference of expense between the timber-framing, as proposed, and brickwork is not considerable; but brickwork is not only better in every respect, but cheaper.

To enable any person to give a correct opinion of the expense of erecting such a building, the following information will be necessary: —

The nature of the soil, and the height the floor will be above the ground.

The way by which the room is to be lighted; viz. if by a lantern light on the roof, or by windows in the side or end walls.

The manner in which the room is to communicate with the house.

In what way the water is to be got rid of; and if there are any drains near.

The position of the fireplace; and whether it will be necessary to carry the flue up to the top of the house, to get rid of the smoke, as this is often an expensive affair.

The manner in which the roof is to be covered; whether with slates or lead.

And, lastly, whether such a building is likely to be considered a nuisance to the neighbours; and whether there is any covenant in the lease of the dwelling-house of the artist prohibiting the erection of any new building without the landlord's consent. — *I. J. Kent. Manor Place, Paddington, March 7. 1836.*

Wing Walls of Brick Bridges on Railways. — I should be obliged if any of your correspondents would be kind enough to inform me which is the best

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figure for wing walls: whether to have the offsets placed outside, as in *fig. 131.*; or partly inside, and partly outside, as in *fig. 132.*; or, as is generally done, the whole of the offsets placed inside, next the embankment, as in *fig. 133.*

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The impression on my mind is, that placing the offsets outside would increase the strength of the wall; but, as the inner face would be smooth, the earth would not connect itself with the brickwork so well as if the offsets were inside. Perhaps the best figure is that with the offsets partly inside, and partly outside.

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As weight adds much to the strength of wing walls; or rather, as weight, in this case, is strength, it might be a good plan to build two walls, with the offsets on each side, and fill in the space between them with clay or concrete as in fig. 134. — *W. S. London, April, 1836*

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ART. V. Institute of British Architects.

MAY 23. 1836. — Charles Barry, V. P., in the Chair. The minutes of the last Meeting were read. The balance in the hands of the Treasurer appeared to be 237*l.* 5*s.* 6*d.* The meeting then proceeded to the election of a Member of the Council; when George Taylor, Fellow, having been proposed and seconded, and no other Member being proposed, Mr. Taylor was declared to be duly elected as Member of the Council, to succeed Mr. Basevi.

Monsieur Karl Theodore Ottmer, Architect, of Brunswick, being present for the first time since his election, was introduced and admitted Honorary and Corresponding Member.

Read, a letter from M. le Chevalier de Remy, Perpetual Secretary to the Academy at Vienna.

Letters received by Mr. Colquhoun from the authorities in Hamburg, Lubeck, &c.

The following donations were announced as having been received since the last Meeting: — Academy of the Fine Arts at Vienna, medal struck in honour of Count Metternich, Curator, and copy of rules and regulations; Sydney Smirke, Esq., copy of his Remarks on the Architectural History of Westminster Hall, 4*to*; impression of print of Public Paths, erected by him at Rochester; Ithiel Town, Esq., a detail of some particular services performed in America, 12*mo*; Outlines of a Plan for establishing in New York an Academy of Fine Arts, pamphlet, and various prints; M. Habershon, Esq., first part of his work on the Ancient Half-timbered Houses of England, 4*to*; Mr. B. Fowler, a pamphlet by him on the Philosophical Principles of Heat applied to Domestic Purposes; J. B. Gardiner, Fellow, fragments from the ruins of St. Helen's Priory, Bishopsgate.

J. Britton, Honorary Member, read a paper on the History and Present Condition of the Church of Stratford-upon-Avon, the Birthplace of Shakespeare, with an Account of the Repairs about to be done thereto by H. Egington, Associate, illustrated by drawings; T. L. Donaldson, Honorary Secretary, read a History of the Construction of the Portico of the Basilica at Vicenza, erected upon the design of Palladio, illustrated by drawings.

Resolved, That the best thanks of the Institute be presented to the above gentlemen for their presents, papers, and communications. Adjourned.

JUNE 6. — P. F. Robinson, V. P., in the Chair. The minutes of the last Meeting were read. The balance in the hands of the treasurer was stated to be 258*l.* 10*s.* 6*d.* The following gentlemen were ballotted for, and declared to be duly elected: — As Fellow, David Mocatta, Architect, of Guildford Street, Russell Square; as Associate, W. Smith, Architect, of Cole Hill Lodge, Fulham. Thomas Lewis, Esq., having paid twenty-five guineas into the hands of the Treasurer, and having been recommended by the Council for Election, was duly elected Honorary Fellow.

The following letter was read: —

“Lincoln's Inn Fields, June 3. 1836.

“Dear Sir,

“It having been intimated to me, that some of the members of the Institute of British Architects have expressed a desire for an impression of the engraving from my portrait, painted by the late Sir Thomas Lawrence, to be hung up in

the room in which the meetings of the Institute are held, I beg to say, that I have an excellent copy of that picture, painted by Mr. John Wood, which I shall have much pleasure in placing at the disposal of the Council, if you are of opinion that it would be more satisfactory to the Members in general.

"With sincere and hearty wishes for the success of your excellent Institution, and the health and happiness of its members,

"I am, dear Sir,

"To T. L. Donaldson, Esq.

(Signed.)

"JOHN SOANE."

Resolved, That the most grateful acknowledgments of the Institute are due to Sir John Soane, for this fresh and distinguishing mark of the kind interest which he is pleased to take in the proceedings and well-being of the Institute. That a minute to this effect be communicated to Sir John Soane, signed by the members of the Council, and that his lordship the President be respectfully requested to accompany this vote of thanks with a letter, expressive of the feelings of the members on this most gratifying occasion.

The following donations were announced as having been also received since the last Meeting:—Henry Rhodes, Fellow, copy of the Laws and Regulations of the Academy of Fine Arts in New Spain, 4to, Mexico; J. B. Gardiner, Fellow, specimen of Purbec marble; Frazer's Literary Chronicle, from the proprietors. Resolved, That the thanks of the Institute be presented to the gentlemen above named.

A letter was read from Signor G. Borsato of Venice, acknowledging the honour of his election as Honorary and Corresponding Member; containing, also, a list of the MSS. of Vitruvius, contained in the Library of St. Mark, Venice.

T. L. Donaldson, Honorary Secretary, explained the means lately employed for placing the statue of Napoleon upon the Colonne Vendôme, Paris. This operation was one of considerable difficulty. It is true that, as a statue had previously been placed on this column, and had been removed, M. Lepère, the architect charged with the task of erecting the present statue, had precedents to resort to; but, unfortunately, they were such as were of no use to him. When the first statue was placed in its elevated situation, the workmen availed themselves of the scaffolding already fixed firmly in the ground for erecting the column, and, of course, found scarcely any difficulty; and the apparatus which was used for taking down the statue was inapplicable to the raising another in its place. M. Lepère was therefore obliged to contrive a plan for himself, which he adopted with great success; and which has the rare merit of being extremely simple, at the same time that it displays an admirable combination of theoretical knowledge with practical experience.

This plan consisted of a scaffolding, on which was placed the crab destined to raise the statue; and which had for its basis the front wall of the column; and for its point of resistance the whole weight of the cupola, which was nearly 27,000 kilogrammes. The weight of the statue, crab, cable, &c., was about 7000 kilogrammes; so that an immense power was given to the long arm of the lever. The details could not be understood without cuts, but we shall probably give them, with these, in a future number.

The statue, which was modelled by M. Seure, sculptor, was cast at Roule, by M. Crozatier. Its height is 11 ft. French (about 12 ft. English) from the top of the hat to the plinth; and the plinth is 9 in. French more. The statue is fixed on the column by strong iron pins, which are soldered deeply into bronzes, placed for that purpose on the capital of the column.

John Landseer, Esq., read a paper containing observations upon the era of the erection of the pyramids, and on the reasons why they are not sculptured with hieroglyphics.

After resolving that the best thanks of the members were due to Mr. Landseer for this learned and interesting treatise, the Meeting adjourned.

THE ARCHITECTURAL MAGAZINE.

AUGUST, 1836.

ORIGINAL COMMUNICATIONS.

ART. I. *Character of Italian and Grecian Architecture.*
By CANDIDUS.

IN my last article (p. 245.), I mentioned some of the opinions of Mr. Hosking with regard to Palladio and his school; and I shall now enter a little into detail respecting the faults of Italian architecture.

One marked and radical vice of the architects of the Italian school consists in their overloading their compositions with extraneous embellishment, frequently in the most vicious and paltry taste; while they wilfully reject the more legitimate sources of architectural *richness*. Columns are seldom fluted, still more rarely are friezes sculptured, even where the architects seem to have laboured to bestow as much finery as possible. Notwithstanding, too, their excessive love of pediments, they seem quite insensible to the real value and beauty of that feature, debasing it not only by the most *outré* shapes, but by the most absurd application. Pediments have been sometimes applied even to windows placed in an attic, than which nothing can be more uncouth, as well as preposterous; nor is it much more tolerable to behold, as in some of Palladio's designs, statues placed on the raking cornices of pediments, above the principal windows. I cannot undertake to enumerate here the various other abuses which Mr. Hosking has not pointed out, or the sins of omission he might justly have laid to the charge of Italian architecture; suffice it, therefore, briefly to observe, that it is, for the most part, at once mannered and capricious; that it displays more heterogeneousness than variety; that it mistakes baldness for simplicity, frittering for richness; and that it is too much addicted to a certain triviality, even where it affects magnificence; and is, consequently, more pompous than dignified.

I shall, perhaps, be reminded that I ought to speak with more distrust of my own judgment, and pay some deference, at least, to long established taste; for what has obtained such general

approbation must, of course, possess considerable merit. The admirers of Italian architecture themselves cannot, however, very well quarrel with me upon that score; because they have had no such misgivings when they passed sweeping and most contumelious censure on all the immediately preceding styles of the art; although the latter ought to have been exempted from their reproaches, if general consent is to be taken as presumptive of desert. Without giving themselves the trouble to enquire how far other styles, based upon different principles than those which regulate a columar system, are capable of producing effect by conforming to such principles, they cut the matter short, by condemning them *in toto*. I, on the contrary, object to Palladian, or Italian, architecture, that, professing not merely to be founded upon, but to be essentially the same as, the system observed by the ancients, at least, wherever it employs similar features, it nevertheless tolerates practices the most repugnant to it; and only approaches to it in such manner as invariably to remind us of its dissimilitude, and of its inferiority to the other. I am now speaking of this style as it showed itself in its most palmy state, and as it was practised by those who are looked up to as the greatest masters in it; nor do we say that, in itself, it ought to be charged with all the vices and caprices which have been engrafted upon it. When purified from such defects, it has some claim upon our favour; yet it must chiefly be when the orders are dispensed with, or, if any, only the Corinthian employed; and, if we may form any prognostic from one or two very recent examples, there seems to be an inclination just now to abandon strictly Greek models, and to revert to Italian architecture; greatly sobered, however, and divested of its most offensive characteristics. The Travellers' Club House, Goldsmiths' Hall, and the new City Club in Broad Street, are all decidedly Italian in character, in composition, and in detail. The last-mentioned is, perhaps, the most strikingly so, on account of its Doric order in pilasters, its heavy consol cornice, and the curved and triangular pediments placed alternately over the windows, together with the fancifully carved armorial shield, introduced in the pediment of the centre window. Little as I desire to see even such a modified and reformed Palladianism gain ground among us, I admit it to be preferable to that most bastard of all styles (if style it may be called), which gives us bits and patches of Greek architecture, stuck up *en appliqué*, on spruce and dapper-looking houses. This shop-front method, excusable only in shop fronts, is the mere mockery of classical taste, and, in fact, the most arrant cockneyism. Architecture should not be made to deal in samples, or to make a show-board of the front of a building, for the purpose of displaying mere detached specimens, that may be

studied either in the plates of Stuart, or any of the numerous copies from them.

This brings to my recollection that I have as yet done little more than show Mr. Hosking's anti-Vitruvianism and anti-Palladianism, and that I may also exhibit one or two of the opinions he entertains in regard to Greek architecture itself. Before he proceeds to treat of the orders employed in it, he questions the propriety of the term *order*, as being hardly sufficiently comprehensive, and as conveying the idea of "restricted forms and proportions." But I had better let him speak for himself on this point; and the following extract will at once give an idea of the tone and spirit in which he handles the subject: — "There is nothing in any one 'order' that, were it not for custom, would not be thought as fitting in any other, as in that to which it may belong. The Greeks did not hesitate to put triglyphs in the frieze of an entablature the columns of which were fillet-fluted, and had foliated capitals, as some ruins at Pæstum attest. As to names, the Doric might, as we have said, be called Corinthian with more propriety; the Ionic, Samian; and the Corinthian, Athenian; referring to the oldest known examples of each. The term *style* would be more correct than *order*, as it would indicate the column as the feature referred to, without conveying the idea of fixed rules; and architectural works into which columns do not enter need not be constrained to admit the arrangement of some order in the composition, proportion, and detail of its various parts. In naming, too, the Doric might be termed the Greek sacred, or triglyphed, style; the Ionic, the voluted style; and the Corinthian, the foliated; thus admitting any varieties of combination which could be expressed as composites of the voluted and foliate, or of the foliate and triglyphed, as the case might be."

All this will, of course, be considered by many as woefully unorthodox and latitudinarian; and will be deprecated, as tending to unsettle what so much pains have been taken to settle with the utmost nicety. Alas! for the gentry of the "ruler and compasses" school! who are thus turned adrift to shift for themselves, without either rule or compass to steer by. Mr. Hosking's "styles" must disorder them and their orders completely. As regards my own particular self, I own I am less *particular* upon the subject; and that I am very ready to accept this doctrine under certain limitations. I certainly do not see what is to be gained by merely disturbing names which have now obtained universal currency and a definite meaning: it matters little whether columns with foliated capitals be termed Corinthian or Athenian; even admitting the latter epithet to be historically more appropriate as respects their origin. It would, on the contrary, be a very influential improvement; and one attended

with little or no inconvenience at first, were we to adopt the term "style," when mentioning in general terms the Doric, Ionic, &c., and employ that of "order" in a more restricted sense; namely, to distinguish the leading varieties of the same style. Thus, we might properly enough speak of the Ilyssus, or the Erechtheum order, as contradistinguished the one from the other, or from other modes of the Ionic, or voluted, style: and in the same way we might define with tolerable precision, as well as brevity, the principal orders of the Corinthian style; whereas, at present, the term "Corinthian" is exceedingly vague and indefinite; comprehending, as it does, so many subordinate varieties, agreeing only in the circumstance of the capitals being foliated, but differing in nearly every other particular. It is not, however, for the sake of greater precision and convenience alone that I would recommend this change in the vocabulary of the art; but because it would directly tend to do away with many impertinent and enfeebling prejudices, that are instilled into the mind of the student, even with the very elements of his education. Another and very important service would be, that, instead of being restricted to one uniform character, or to any fixed proportions, one and the same style would admit of much variety of expression; and that the different orders comprised in it may vary considerably in their proportions.

In regard to the other opinions expressed by Mr. Hosking, I think that, although there are some things, the exclusive application of which to any one order or style in particular has little more than custom and conventional propriety in its favour, there are others which do not admit of being arbitrarily rejected or adopted. Were such not the case, it must follow, that there is really no other propriety in any of the ornamental parts of architecture, than what habit has assigned to them. Now, even I, who may probably have fewer prejudices and scruples than most of my neighbours, cannot go quite so far as this; because, at that rate, we must admit that a column with either a voluted or foliated capital might dispense with a base, and might have its shaft fluted after the Doric fashion. Yet it is obvious that these differences between the latter style and the two former are not merely conventional, but result from real differences of *style* itself. It is not because a column is so many diameters in height, that it is to be fluted according to this or that manner, to have a base, or the contrary; but, if for any valid reasons at all, for very different ones. In the voluted and foliated styles, the capitals of which are so much more delicate and ornate, mouldings for the bases of the columns become necessary; not on the whimsical pretence assigned by Vitruvius, but to produce consistency of character and harmony above and below; and, likewise, for the purpose of rendering the foot of the column of

such diameter as shall make it correspond pretty nearly with the greater diameter of the capital, as otherwise the column would seem top-heavy. In the Doric column, the agreement is obtained between the two extremities in a different way: the column is, in fact, as wide above as below; that is, taking its echinus as its upper diameter; for the expansion of the capital is occasioned only by the contraction of the upper part of the shaft and the hypotrachelion. In the voluted style, on the contrary, the average width of the face of the capital is one half more than the lower diameter of the shaft, and, consequently, requires to be counterbalanced by a base. The problem, it is true, might be differently solved; we might, for instance, get rid of the base by increasing the lower diameter to the proportions assigned to that member: yet this would be nothing more or less than shortening the column; and, as it would require to be tapered accordingly, would be only placing a Doric shaft beneath a voluted capital. In like manner, the mode of fluting is neither exactly arbitrary, nor is it merely habit which recommends arrise-fluting for the Doric, and fillet-fluting for the other two styles. Consistency of character, without which there can be no style, demands it. In the Doric, which is marked by breadth, and by lines and plane surfaces, shallow flutings, forming arrises, or ridges, on the general face of the shaft, harmonise with all the rest, and serve to carry on the leading expression; but such flutings would be utterly at variance with the curved mouldings of different kinds employed in the other styles. They would look poor and harsh when brought into contrast with the spirals of the Ionic capital, and the tori of the base. In order to make them accord with these, and to keep up harmony between the concavities and convexities, they must be made deeper, and their sections be made to describe fuller curves; and, as they must, of course, be narrower, they must be increased in number, and have spaces, or fillets, left between them. By these means the whole shaft acquires admirable delicacy and richness, owing to the greater number and depth of the shadows, as well as to the effect of the intervening fillets, which are necessary, if only to balance by their light the quantity of shadow.

Among those things which custom appears to have arbitrarily appropriated to a particular style, are the triglyphs of the Doric frieze; for, according to the so long received opinion, that these members had their origin in a prototypic timber construction, and represent the ends of the beams of the roof, they would be equally suitable for, or rather indispensable in, every style of Grecian architecture. It is for those who maintain this theory to show wherefore triglyphs, or something corresponding to them, should not be employed in Ionic and Corinthian friezes,

just as the same system of entablature is observed in all the orders, although differently modified. Although the Doric triglyph partakes so strongly of the general character of that style, as to be unfitted for any other (and, even were not such the case, it would hardly be advisable to apply indiscriminately what has hitherto been a distinctive mark of a particular style), I am of opinion, that the hint just thrown out is not altogether undeserving attention; and that some analogous ornament might occasionally be applied to Ionic and Corinthian friezes. At present, let every other part of a building in either of these latter styles be ever so highly finished, the frieze is almost invariably left quite plain. Hence there is a poverty of effect, and an evident falling off here, in many otherwise *exact* imitations of Greek architecture. While they slavishly copy Greek entablatures in their minutest details, our architects seem entirely to forget that in the originals the frieze was generally enriched with sculpture; consequently, if this is omitted, greater embellishment must be bestowed elsewhere. In consequence of their not attending to this circumstance, the cornices of most of our modern Ionic examples have a meagre shelf-like appearance, quite out of keeping with the columns themselves, although such a cornice was sufficient when it was desirable to keep it somewhat subordinate to the sculpture immediately beneath it, and which imparted sufficient richness to the whole upper line of the structure. Either the cornice itself ought to be rendered a more efficient feature in the design, by giving it greater depth, and additional mouldings; or, if continued sculpture must be dispensed with, ornament of some kind should be applied to the frieze. The deservedly admired little Ionic chapel in North Audley Street is indebted for much of its merit and beauty to its cornice, which, besides being dentiled, is otherwise much enriched, and has altogether a *boldness* that forms a striking contrast to the *baldness* and insipidity of some other *soi-disant* pure Greek examples among us; a boldness by no means misplaced; for, notwithstanding its richness and delicacy, the Athenian Ionic capital is particularly bold in its volume and outline. With the view of explaining what has been said in regard to embellishment for the Ionic frieze, I may here mention that I have lately seen a design, where, among other novelties in the composition (Ionic), the frieze is ornamented with tablets, or blocks, following nearly the proportions and arrangement of triglyphs, but sculptured with rich voluted scrolls, similar to those upon Ionic *antefixæ*, or eaves-tiles, and, of course, sufficiently in character with the rest of the order. I may also observe here, that these remarks on the Ionic frieze apply, in some degree, to the Corinthian; at least, in such examples as the Tivoline order, which may be seen in the Bank of England,

both with a plain and sculptured frieze. The difference of effect, therefore, may be readily determined; and, on comparing them, it will at once be perceived that the omission of the sculpture (all the rest being kept the same) gives quite a different character to the order, causing the columns to predominate, and their capitals to appear heavy, while the entablature becomes comparatively insignificant. Perhaps it was in order to counteract this, in some degree, that the architect introduced so many blocks and ornamental scrolls on the upper line of the edifice.

I have perhaps erred in supposing that Mr. Hosking intends the first sentence of the passage quoted in p. 339. to be taken exactly *au pied de la lettre*; for I can hardly imagine him disposed to sanction such incongruities as I have pointed out; or to mean that the different modes of fluting, &c., would serve just as well for one style as another, were it not that custom has determined otherwise. If he means no more than that, by a *skilful accommodation to the character of the style* to which it is transferred, much that is now considered the exclusive property of one order may be applied to another, I most cordially agree with him. I have already hinted that, excellent as I consider Mr. Hosking's treatise upon the whole (and I am so well pleased with it, that I only regret his limits should have prevented him from doing more than briefly touch upon many points he seems well qualified to discuss), there are some few opinions in which I certainly do not concur with him. Among these is his condemnation of Caryatides, or, as they might more properly be styled, *anthropostylar* figures. Not content with objecting to them, except under peculiar circumstances, he even goes so far as to term them "a solecism in architecture." That they may be employed in a tasteless and absurd manner, I do not deny; but that they are in themselves contrary either to reason or strict architectural propriety, I cannot admit. What can be more preposterous, I have heard it urged, than to see females supporting a heavy entablature? This may be excellent as gallantry, and unexceptionable as common sense: still I must be excused from thinking it good criticism; for, if art is to be tied down to plain common sense, we must henceforth withdraw our admiration from many things upon which we now bestow it. The common sense, however, of such objectors is exceedingly short-sighted, and one-sided. If it be absurd, in one particular case, to represent human figures doing that which real human beings cannot do, it is no less so in every other. Why, then, if our sensibilities are so disagreeably worked upon at beholding ladies sustaining the weight of an entablature, and performing the office of columns, are we not equally shocked when we behold the same delicate creatures compelled to stand on the top of a building, or fixed in niches, like a sentinel in his sentry-box, exposed to

burning sun or storm? Or why do we not turn giddy out of mere sympathy with the unfortunate hero who is destined to pass his days and nights, like Simeon Stylites, perched on the top of a column? Or, again, if reason and common sense are to be our guides, how can we for a single instant tolerate such a gross offence against both as meets our eyes in a bust, representing, not a death's head, but a living animated countenance, dis-severed from its body? Common sense will, I apprehend, be hardly found to answer the purpose of those who found upon it their objections to Caryatic columns. The absurdity (if there be any at all) lies rather with statues introduced as accessories to architecture; for, being more natural in themselves, such application of them becomes still more unnatural; whereas an anthropostylar figure has (at least, ought always to have) a certain fixity, if I may so term it, and positive architectural character, which shall distinctly mark it for what it is. Attitudinising, *figuranti* Caryatides, I certainly should dislike quite as much as Mr. Hosking, or any one else; neither should I greatly admire them placed under a pediment, or serving as the sole order in a building; but, I confess, I am barbarous enough to be delighted with them when gracefully and picturesquely introduced; and if, in this instance, my judgment errs, my taste, at least, is consoled by being countenanced by the example of Athens.

To say the truth, I cannot help thinking that, both here and on one or two other occasions, Mr. Hosking is rather too straight-laced, rigid, and puritanical in his notions, notwithstanding the latitude he is ready to allow in regard to other points. Thus, in his section on horizontal composition, which, with the corresponding ones, forms a novel, and certainly very interesting, feature in a treatise like his, he lays it down as a maxim, that a portico ought not to be introduced, except it either occupies an entire side or end of the building against which it is placed, or is made a distinct portion of the façade, and elevated above the rest, as in the London University and St. George's Hospital. Now, in my opinion, a projecting portico, that is, one really advanced beyond the principal mass of the structure to which it is attached, which is not the case in a mere prostyle, produces great relief in a lengthened façade, and prevents the too great monotony, and also the too great similarity, in composition, which would take place were the use of the portico restricted, as Mr. Hosking recommends. The reason why the Greeks uniformly adhered to one disposition, and, in fact, notwithstanding the many 'hard words' employed to mark certain minor differences, the plans of all their temples are the same: the reason of this, I say, is obvious; their temples being merely simple oblong structures, like (let not the simile be thought a profane one) an English barn, having columns externally, either

at one or both ends, or on every side, and, consequently, such a kind of apartment as might very well be covered by a single roof. Our buildings, on the contrary, are more complex: they are divided internally by walls, which afford supports for the roof, and thus admit of its being formed into similar divisions, any one of which may, without impropriety, have its extremity fashioned as a gable, or pediment, just as we see gables employed in Gothic architecture. I do not say that an architect may not very easily err in regard to the employment of pediments; he must consult taste in this, as well as in other matters of composition: all that I would stipulate for is, that the pediment should actually be a part of the roof, and that its own roof should be seen to extend backwards, so as to cover that division of the building.

I may here take the opportunity of observing that, much as I admire the beauties of style in Grecian architecture, I certainly do not approve of that excessive simplicity of composition, and that rather wearisome sameness of arrangement and disposition, which mark nearly all the Grecian buildings; and which seem to have left little more for the architect to do than to determine the actual dimensions, and arrange what belongs to detail. In this respect, the Greek temples are like London houses: when you have seen one, you have seen nearly all; for all are laid out upon the same plan.

Mr. Hosking seems to value simplicity too exclusively: it is, undoubtedly, a very meritorious quality, but it is not the only one to be attended to; and, when it becomes nothing more than repetition, and we find precisely the same kind of simplicity presented to us again and again, we are disposed to recur to the stale saying of *toujours perdrix*. I dissent, therefore, entirely from the censure Mr. Hosking has passed on what I regard as one of the most interesting and valuable studies of Athenian architecture; namely, the triple temple in the Acropolis, which he objects to for the very circumstance that gives it so much interest in my eyes; namely, its irregularity, and its deviation from the usual form. He says, "It was completely spoiled by the attachment of a tetraprostyle to one of its sides; Ionic, certainly, like that in front, but of a different size; beautiful in itself, but a blot on the main building, with which it harmonises in no one respect." Now, I cannot help thinking that it did harmonise; while this collocation of two features, perfectly similar in style, although so different in some other respects, must have produced a delightful combination, with just such a dash of the picturesque, and of contrast, as to give an effect to each portion which neither would have possessed separately. It should be borne in mind, too, that, although both porticoes might be viewed from the same point, they faced different

aspects. At all events, as regards one very important quality in architectural composition, variety, exceedingly useful lessons are to be derived from it, and many more ideas than it seems at first capable of affording.

Elsewhere, again, Mr. Hosking strenuously dissuades architects from the adoption of irregular or intricate forms, as subversive of beauty; and by irregularity he does not merely mean want of uniformity, but such irregular combinations of plan as that of the Pantheon at Rome. By modern architects, this species of irregularity has frequently been carried too far; and they have sometimes pushed intricacy into confusion; for which I do not attempt to become their apologist. Yet it appears to me, that, if there is a vicious kind of intricacy, there is also its opposite: a kind of intricacy, or what appears at first sight to be so, which afterwards, when we come to examine more carefully, resolves itself into harmonious and skilful arrangement; and which, instead of affording a single effect, excites our curiosity, and detains our attention, by presenting a succession of them according as we change our point of view. It would be quite idle to attempt to lay down any definite precepts, either as to this, or other circumstances of a like nature; because it is at such points that precepts terminate; and it remains for the artist to determine, in each individual case, what all the other circumstances of his design point out as most eligible. Precisely is it in considering this rational liberty that anti-Vitruvianism consists. That such liberty will frequently be abused, is no more than what must be expected; nor do we see wherefore the architect should be condemned to walk in a "go-cart" all the days of his life, more than any other artists. Go-carts and leading-strings are very useful contrivances; but, were no one to be liberated from them, the world would behold no Taglionis.

ART. II. *On ancient Theatres and early Dramatic Entertainments.*
By EDER.

THE drama, or its rude incipient representations, date long anterior to the day of Grecian eloquence and learning. Plays, or representations of historical events, were performed in Hindostan, China, and Peru, before they were known to the Greeks; and, as these countries could have had little communication with each other, it is evident that each of these people must have invented for themselves this species of amusement; the earlier dramas of each people having, probably, originated in the recital of the heroic deeds of their progenitors of former days; which became, in time, so altered and added to, from the defectiveness of oral transmission, that at length the coinage of the brain was

substituted for historical truth. The origin of the Grecian drama seems to have been the songs which were sung in honour of Bacchus at his festivals, which were held in every village; for which a goat (which, being considered injurious to the vines, was the animal usually sacrificed to Bacchus) was the reward; and hence the origin of the word tragedy, which is derived from *tragos*. In process of time, a regular chorus was formed; the singers habiting themselves in goat-skins, and wearing the horns of the goat; some representing satyrs, some Pan, and others Silenus; each of the performers carrying in his hand a thyrsus, or pike, with ivy leaves twisted round it, and wearing a crown of vine branches, or of some other tree consecrated to Bacchus, on his head; whilst some of the assistants dragged along goats to be sacrificed for the ravages they had committed among the young vines by browsing on them. The singers afterwards amused themselves by shouting hymns to the honour of Bacchus, by vociferous invocations, by screaming and yelling, by running through the woods, and over the mountains, imitating drunkenness, and by violent dancing and gesticulation. They banded their coarse jests upon the follies and failings of each other, in terms of the most disgusting indecency, and excessive ignorance. A French historian, speaking of these festivals, justly expresses his surprise how a people so wise as the Greeks could tolerate such scenes; and quotes a description of them from Plato, who, he says, had seen the whole city of Athens drunk at once.

Such was the origin of the drama: but these festivals, though even at best but drunken "orgia," such being actually the name given to them, became at length modified in brutality, and improved by the recital of verses, &c.; and Thespis, who first added an actor distinct from the chorus, would come forward at these feasts, and from the cart in which he travelled from village to village, recite some extempore tale, or mythological story. A chorus, trained by himself in singing and dancing, then commenced; and Bacchic songs, and extempore narrations followed at intervals, until the rustic bystanders were tired.

Gradually the stories became the principal part of the amusement, and the songs adventitious appendages. Dancing accompanied the songs; and "hence," says Athenæus, "Thespis, Pratinus, Carinus, and Phrynicus were called dancers, because they not only used much dancing in the choruses of their plays, but they were common dancing-masters, teaching any body that had a mind to learn." Thespis lived about the 60th Olympiad; and is admitted on almost all hands to have been the inventor of tragedy, and Horace and Plutarch coincide in this opinion: but, by a few, Phrynicus, his scholar, is said to have been the inventor; for he dropped the absurdities of the original drama, and gave it a more becoming dignity, resulting from the em-

ployment of more elevated subjects, such as history, mythology, &c. It probably lies between both; this, as most other arts, not having been invented by any one person, but being gradually developed by successive improvers, until some master mind chisels each art into form, and leaves it perfect; the credit of the invention is then given to him, when that of merely perfecting it is his due.

The honour of the invention of comedy is given to Epicharmus and Phormus, and is said to have begun in Sicily 500 years B. C. Satyric plays were introduced soon after, and were a mixture of comedy and tragedy. This latter species of drama derives its name from the satyrs, and has no connexion with that kind of vengeful raillery, called satire. Poets generally added a satyric character to their plays, as it served to temper the gaiety of comedy, or to soften the gravity of tragedy. How far the poems of Homer might have influenced the drama cannot here be shown; as, according to Cicero, they were collected together, and arranged as we now see them, by Pisistratus or his sons, and spread throughout Greece before the age of Phrynicus; and Eschylus says that his tragedies were but "slices from the plenteous feasts of Homer." Eschylus made still further changes; he shortened the songs of the choruses, added a second actor, employed dresses, raised the stature of the actors by means of a very thick-soled shoe, called cothurnus, and made them wear masks, formed so as to increase the distinctness and power of their voices. Previously to his day, actors stained their faces with wine lees; and this was sometimes done even after the use of masks, as we find when Aristophanes wished to ridicule Cleon, no workman could be found bold enough to make a mask like Cleon's face: but Aristophanes himself came forward, with his countenance smeared with wine lees, to ridicule Cleon, and reproach him with receiving bribes, and embezzling the public treasures. Many more gradual improvements were made in this mimicry of human actions, until the genius of Sophocles and that of Euripides rent asunder the trammels, and purged the stage of the trivialities of former dramatists; giving the finishing stroke to the art by their productions.

With the Greeks, theatrical amusements constituted part of their religion, their dramatic representations being only held during the festivals of Bacchus, to whom all theatres were, at first, dedicated; though in after-days we find they were sometimes dedicated to Venus. These festivals, or Dionysia, as they were called, from Dionysius (Bacchus), were three in number, and were held in the spring of the year; they were called the Rural, the Lenea, from a word signifying a wine-press, and the Great Dionysia; which latter took place between our March and April, and to which all Greece congregated, it being the season

when the most important dramatic contests were held, and deputations from foreign parts received. These exhibitions were esteemed to be of such vast importance, that they were placed under the direction of the first municipal magistrates; the first archon taking upon himself the management of the contests at the Great Dionysia; and the second archon, called king archon, those of the Lenea. These archons selected the compositions of the competitors, the prizes being adjudged according to the opinion of five judges, appointed by them. To every poet who essayed, were given three actors chosen by lot, and a chorus. The training of a chorus was so important, that some one, called choragos, was chosen by his tribe for this purpose. Whoever among the choragi gained a victory, dedicated a monument, or tripod, to Bacchus; containing in a few words the names of the principal performers, and his own. Thus we find on the choragic monument of Lysicrates, at Athens: —

“ Lysicrates of Kikyna, the son of Lisitheides, was choragos.
The tribe of Akamantis obtained the victory in the chorus of boys.
Theon was the performer on the flute.
Lysiades, an Athenian, was teacher of the chorus.
Evænetus was archon.”

This monument was erected in the 111th Olympiad; i. e. in the days of Alexander the Great.

The following is one of three inscriptions from the choragic monument of Thrasyllus: —

“ The people gave the games. Pytharatus was archon.
Thrasycles, the son of Thrasyllus, a Decelian, was agonothetes.
The boys of the tribe of Hippothoon gained the victory.
Theon, the Theban, performed on the flute.
Prononus, the Theban, composed the piece.”

The inscriptions show that this was given by the people, the former by the choragos Lysicrates.

Plays were always performed by the Greeks in the open day; and originally by the side of some gently rising hill; the spectators being on the acclivity, and the actors on the plain. The inconvenience of this was, however, soon perceived, and wooden structures were erected for the purpose; but these were, at best, temporary, and were sometimes dangerous, as was shown at a representation between the rivals Eschylus and Pratinus, when the whole theatre fell, burying hundreds in the ruins. This event caused the erection of more substantial edifices; and the first stone theatre in Athens was raised in the time of Themistocles. This was the archetype of numerous others erected in Greece; but it appears that stone theatres had been erected in the colonies long previous, as at Egæta, Cysthena, Syracuse, Agryium, Tauromenium, Adria, and other places. The enormous number of theatres erected in Greece and Asia Minor, and the grandeur and extent of their remains, may well excite, first,

the wonder, and then the admiration, of the moderns, and show in high relief the wealth, the luxury, and the intellectual character of the vivacious Greeks. Wherever the wandering footsteps of the traveller carry him, there does he find these remnants of Grecian civilisation. At Miletus, there are the remains of a theatre, externally of marble, 457 ft. long; another at Hierapolis contains all its marble seats unremoved. Again he sees their huge forms thrusting themselves from the sides of the hills at Ephesus, Egina, Sardis, Telmessus, Alabanda, Cyzicus, Mylassa, and Megalopolis; one at Epidaurus, built by Polycletus; two at Laodicea; and numberless others in different parts of the country; but, according to Pausanias, none excelled that in the grove of Esculapius, at Ligurio, the remains of which still exist. The seats are of pink marble, and are 1 ft. 2½ in. high, with a breadth of 2 ft. 9 in., in which was a groove, where it is supposed wood was inserted, in order to prevent the feet of those who sat behind from touching the backs of those before.

The theatres of Greece were built on the side of a hill; by which means a considerable saving of labour and materials was effected, as the seats were excavated from the hill itself; and, if of rock, were merely polished, but if of earth, they were generally covered with stone slabs; though occasionally, in the earlier examples, the earth alone formed the seat. So general was this troglodyte mode of building theatres, that but three instances are known of their being built in a plain, two in Greece, and one in Asia Minor.

The plan of the ancient theatres may be said to be a semi-circle, the circumference being produced a little at right angles to its chord, thereby forming a semicircle placed against a parallelogram. The circular part, being excavated from the hill, afforded seats for the spectators, and in Greek theatres was termed the *koilon*: the same part, in Roman theatres, was called *cavea*. The parallelogramic portion was the scene; and the semicircular interval between the seats and the scene was the orchestra, which was generally sunk into the earth 10 ft. or 12 ft. below the lowest range of seats. The seats of the *koilon* were divided by corridors, parallel with the circumference, termed *diazomata* by the Greeks, and *præcinctiones* by the Romans; and afforded the means of passing round from one end to the other. The upper part of the seats was surrounded by a portico, where, by some it is said, the women alone remained; but this, at least, could not have been always the case, as females were not allowed to become spectators of the comedies, and, during sudden storms, the whole audience hurried to the portico for shelter. This portico seems to have been the resort of courtesans; and we learn they always paid a certain sum for their admission: for it appears their society was much more

courted than might at first be supposed; arising from the superiority of their manners and acquirements over those of the more virtuous matrons, who were treated with the greatest indifference, and were always rigorously confined to the house. So great were the acquirements of some of these frail fair ones, that it is related, that even the grave and learned Sophocles did not esteem it beneath his dignity to share with Pericles the favours of the beautiful Aspasia, and learn love and philosophy at her feet.

The seats were again divided from top to bottom by stairs, radiating from the orchestra, and dividing the seats into wedge-shaped masses, called *kerkides* by the Greeks, and *cunei* by the Romans.

The Greek orchestra was considerably larger than that of the Romans; as with the latter no part of the drama was acted in it, but it was appropriated to the senators, it being but 5 ft. below the stage, or pulpitum. It was quite otherwise with the Greeks, who required a larger space for the solemn dances which accompanied the flutes, and the songs of the choruses, when the performers passed slowly across, during the strophe, from left to right, returning during the anti-strophe, and stopping at the epode, in front, between the thymele and the scene. The name of the orchestra is derived from the Greek word signifying to dance. The thymele seems to have been an altar, placed nearly in the centre of the orchestra, on which sacrifices were made, and which was dedicated to Bacchus; but it seems, also, to have been used as a seat for the chorus, during the performance, when their assistance was not required. The chorus often separated into two or more parts, singing funeral dirges, and communicating to each other their hopes and fears, or dread of coming events; at other times, they sang of the follies and the failings of humanity, or their pity and admiration of the unhappy, or of those who courageously trusted to the gods, and bore up against what they religiously believed to be their destiny; and at other times they sang hymns to the gods, or sustained part of the dialogue with those on the stage.

Opposite the orchestra was the stage, or *logeion*, from *logos*, a word, or speech. This the Romans termed the *pulpitum*: it projected a little into the orchestra; and on this the performances took place. The front and sides of the stage were adorned with columns and statues; and in the centre was a double flight of steps, leading from the floor of the orchestra to the *logeion*, which was constructed of wood, to increase the power of the voice. Vitruvius relates that metal vases, regulated according to the chromatic scale, were placed in different parts of the theatre, under the seats, in order to reverberate the sound. Behind the *logeion* was the *proscenium*, which receded from

the audience, and was ornamented with columns, &c., representing the façade of some palatial edifice: behind this was a large room for the actors, flanked by dressing-rooms, and rooms for what our modern managers term the properties. That they used painted scenes is evident, but not to so great an extent as the moderns; as appears from the simple conventional practice of admitting the different entrances on to the stage to represent the various ranks, and the different parts from which the performers were supposed to come. Thus, there were three entrances to the stage from the back of the proscenium; the centre one being assigned to regal personages only, and the other two to inferior ones. In each flank there was another entrance; that on the right being appropriated to those who came from the country, that on the left to those who came from the town. The double flight of steps, before mentioned, opposite the logeion, was for those who came from far distant parts.

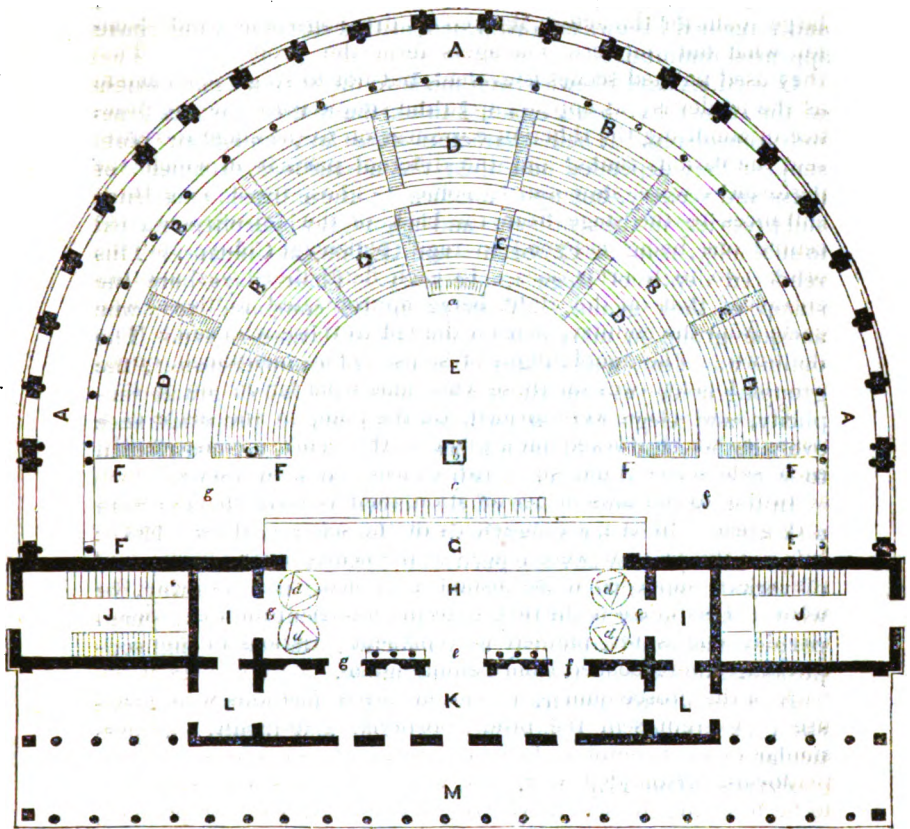
The side scenes were formed, on the plan, in the shape of a triangle, which worked on a pivot in the centre; consequently each side scene could show three faces; and, by varying them according to the laws of permutation, their relative changes were very great. In the arrangements of the scenery, those objects, supposed to be near were placed in the centre at the back; and the objects supposed to be distant occupied the sides near the front. This mode is the reverse of the modern practice. Semi-circular enclosures, painted to represent interiors of domestic dwellings, were pushed from behind against the openings at the back of the proscenium; and various other methods were made use of to represent the other portions of dramatic illusions similar to those employed in modern times; such as suspended platforms, surrounded by clouds, where divinities were supposed to be hovering in the ethereal regions; bladders full of pebbles, rolled on copper plates, to represent thunder; and beacons, towers, and fortresses, which were all contrived so as to produce their required effects.

Under the lower seats of the koilon was a staircase, on which the shades of departed heroes made their appearance before the terrified spectators: this was appropriately called Charon's staircase.

The rules of Vitruvius with respect to the mode of determining the relative proportions of the orchestra, proscenium, &c., are so imperfect, and, as is too often the case with him, generally so much at variance with existing remains, that I have not thought fit to insert them here; but the curious may consult him, and Julius Pollux, for further information on the subject.

The wearing of masks has been much objected to by the moderns against the Greek performers; but, I think, it is much to be doubted if their criticisms are just, or that the character-

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A, Portico surrounding the upper part of seats. B, Diazomata, or corridors, to traverse round to different sides. C, Stairs from top to bottom. D, Kerkides, divided by the radiating stairs into the wedge shapes. E, Orchestra. F, Dromos. G, Logeion, or stage, where the performances usually took place. H, Proscenium. I, Property-rooms, &c. J, Staircases. K, Retiring-room, or saloon, for performers. L, Dressing-rooms, &c. M, Portico where the actors walked and rehearsed their parts. a, Charon's staircase. b, The thymele. c, Steps up to the logeion, for those supposed to come from distant parts. d, Side scenes working on pivots, and showing three faces. e, Entrance for royal personages only. f, Entrances for those who came from town. g, Entrances for those who came from the country.

istic good taste of the Greeks displayed itself less in this matter than in others. From the enormous extent of these edifices, the spectators were necessarily placed at a great distance from the performers, and, consequently, must have lost almost entirely those workings of the human countenance which often so vividly delineate the varying passions of the soul. But, by raising the height of the actors to the heroic size, increasing their bulk, and giving them masks with a strongly marked countenance, expressive of the character represented, an impression was formed

on the minds of the audience far more decided than would have been the case had the actor retained his natural countenance, and remained his own height, which, at that distance, would have appeared diminutive.

Objections have likewise been made to the extreme narrowness of the stage; but here, again, I think the matter has not been well considered. Their characters were few, and their plots simple: they depended not upon the adscititious ornaments of dress and scenery, but upon the beauty, the intrinsic excellence and propriety of the sentiments and language, which often reached to sublimity, as in the *Philoctetes* and *Œdipus at Colonus*. This rendered depth of stage unnecessary. Their plays bore the stamp of their genius. They might be compared to some antique group in marble, or some chaste basso-relievo. The outline was clear, well defined, and easy of comprehension; the grouping bold, yet chaste; and the filling up full of grace, simplicity, and elegance: no part bore an undue preponderance over another, and each, though beautiful in itself, yet contributed to form one grand whole. Such was the Grecian drama.

In the clearer elucidation of the preceding remarks, I subjoin a sketch of a plan for a theatre in the Greek model (*fig. 135.*): it is not the plan of any one particular theatre, but it is composed of various parts, from the remains of those now existing, or what it may be surmised they were in some doubtful or disputed parts, on as good authority as conflicting statements and suppositions, or existing remains, would allow.

In some future paper, I hope to say a few words on acoustics, as applied to buildings in general, and theatres in particular.

Brixton, June 17., 1836.

ART. III. *Experimental Essays on the Principles of Construction in Arches, Piers, Buttresses, &c.* By WILLIAM BLAND, Esq.
 Essay IV. 1. *Experiments with Arches placed on Piers, having Weights and Structures upon them.* 2. *Experiments with Piers that will just balance under the Lateral Force and Weight of different Arches.* 3. *Experiments with Arches of varied Span and Form, acting against each other, being placed on Piers of unequal and equal Heights.*

FIRST, of Arches on Piers, &c.—The scale employed in the following diagrams is one eighth of an inch to an inch; and the wooden voussiors and bricks are of the same dimensions as those specified in the preceding essays under the same title. The results of the first experiments with *figs. 136. and 137.* are as follows:—

Relative to fig. 136.

No. of Experiment.	Dimensions of the Pier.	Height of the Pier.	Weight of the Pier.	Span of the Arch.	Weight of the Arch.	Balancing Weight on the Arch.	Total Weight on the Top of the pier, being half the Arch and the Weight placed on it.
1	4 in. by 4 in.	18 in.	$4\frac{1}{2}$ lb.	10 in.	$4\frac{1}{2}$ lb.	$\frac{1}{2}$ lb.	$2\frac{1}{2}$ lb.
2	4 ... 4	15	$3\frac{3}{4}$	10	$4\frac{1}{2}$	$\frac{2}{3}$	$2\frac{2}{3}$
3	4 ... 4	12	3	10	$4\frac{1}{2}$	$1\frac{1}{2}$	3
4	4 ... 4	9	$2\frac{1}{2}$	10	$4\frac{1}{2}$	$3\frac{1}{2}$	$3\frac{7}{8}$
5	4 ... 4	6	$1\frac{1}{2}$	10	$4\frac{1}{2}$	7	$5\frac{1}{4}$
<i>Relative to fig. 137.</i>							
6	6 ... 4	18	$6\frac{1}{2}$	10	$4\frac{1}{2}$	3	$3\frac{3}{4}$
7	6 ... 4	15	$5\frac{5}{8}$	10	$4\frac{1}{2}$	$5\frac{1}{4}$	$4\frac{7}{8}$
8	6 ... 4	12	$4\frac{1}{2}$	10	$4\frac{1}{2}$	7	$5\frac{3}{4}$
9	6 ... 4	9	$3\frac{3}{8}$	10	$4\frac{1}{2}$	14	$9\frac{1}{4}$
10	8 ... 4	6	3	10	$4\frac{1}{2}$

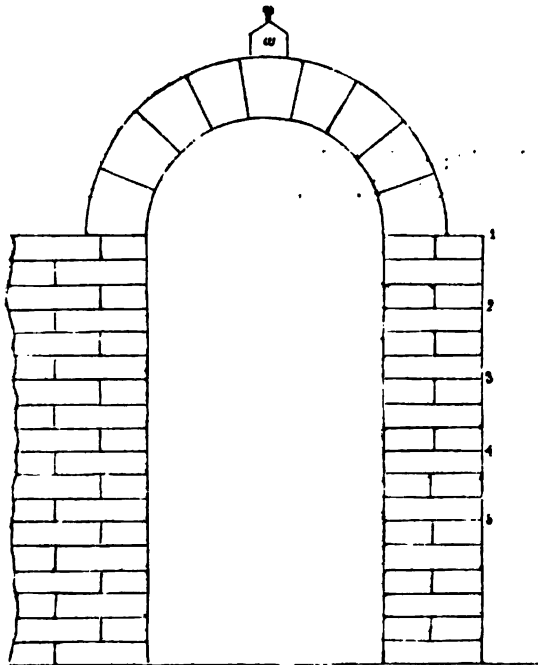
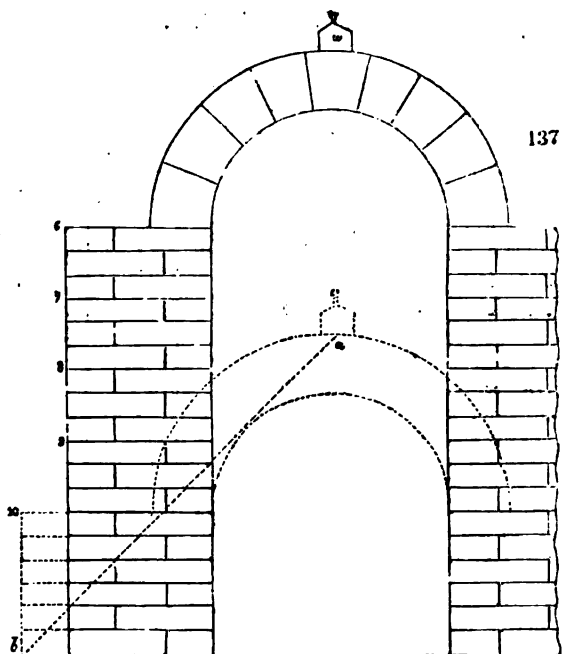
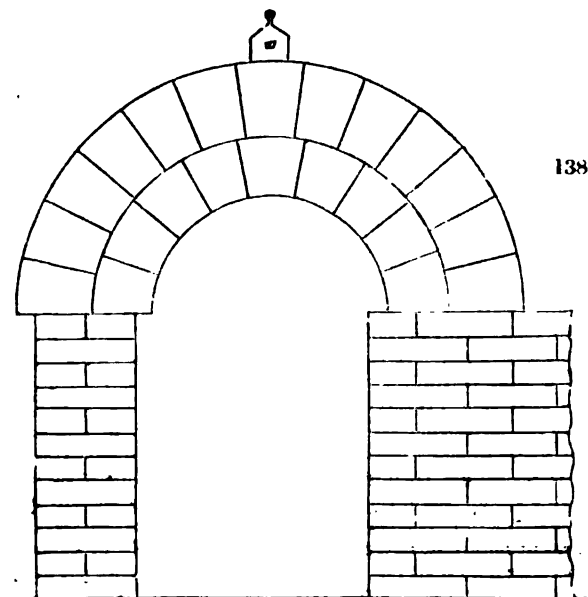


Fig. 138. is an experiment with a double voussoir arch, placed on a pier, the base of which measures 4 in. by 4 in., and

* The result here was, that the arch carried my weight (a weight equalling 147 lb.), because a straight line could be drawn from the weight at *a*, through the voussoir and pier, to the ground *b*.



21 in. in height; and which answers to the third experiment in the table relative to *fig. 136*. This double arch balanced with

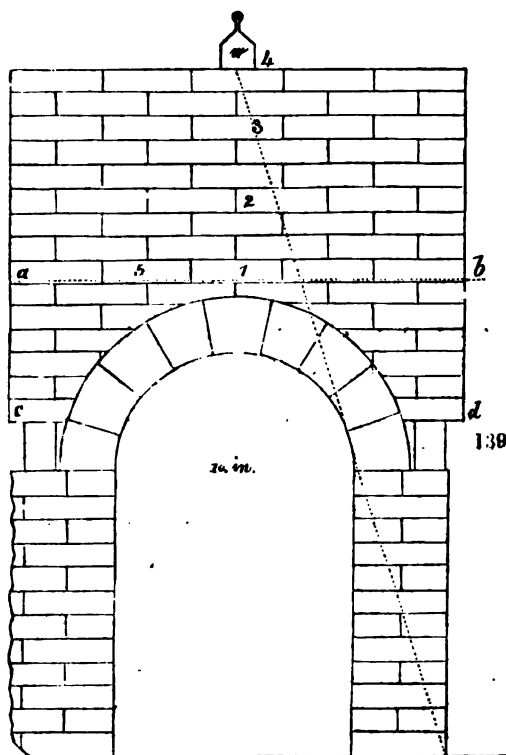


1½ lb., as in Experiment 3. (*fig.* 136.), under the single arch ; consequently, proving the effects of both, as respects lateral force, to be the same.

Figs. 139. and 140. are experiments with arches on piers having superstructures raised on them ; the following are the results : —

Relative to *fig.* 139.

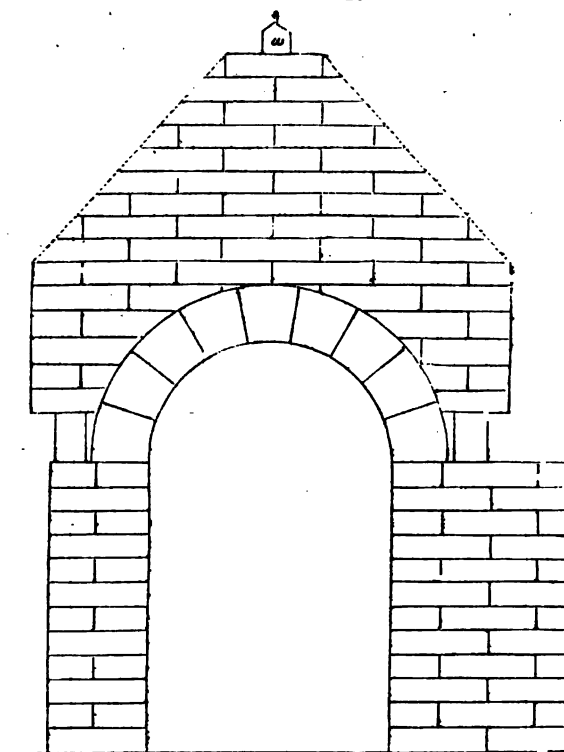
Weight placed at the Numbers, as under.	Courses above the Crown of the Arch.	Weight of Bricks above the Arch.	Weight placed on the Bricks.	Total Weight of Superstructure, and the Weight on the Bricks.	Observations.
2	3 courses.	3¾ lb.	6 lb	9¾ lb.	The arch sustained this weight well. With this weight, also, it carried all firmly. With this weight it carried all without yielding ; and, therefore, could have borne considerably more.
3	6	7½	9	16½	
4	9	11½	28	39½	



After removing the angles of the masonry, as shown in the diagram *fig.* 140., and replacing the weights as before, the

▲ ▲ 3

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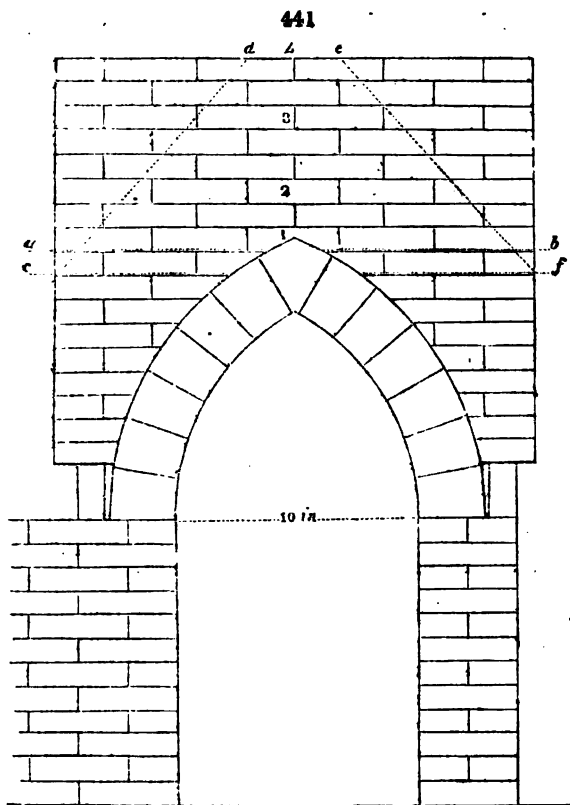


arch and pier had just sufficient strength to support 14 lb. Again, with reference to *fig. 139.*, when the masonry was carried up to the dotted line *a b*, the arch and pier balanced under the weight of 3 lb., placed over the crown at 1; whereas, as shown in the third experiment, relative to *fig. 136.*, the arch and piers with voussoirs alone, that is, the arch without any superstructure, only carried $1\frac{1}{2}$ lb.

The conclusions which may, therefore, be fairly drawn are, that the higher the masonry is carried, the more an arch or pier will support: a similar result to that which has before been given in Experiment 10., Essay II. (Vol. III. p. 113.)

When a weight was placed at 5, on the line *a b* (*fig. 139.*), the arch and pier carried 4 lb.; which is 1 lb. more than when it was placed over the crown of the arch. This proves that the point over the centre of the arch is the weakest part, when the arch is placed on a movable pier.

Fig. 141. is an experiment with a Gothic, or pointed, equilateral arch, sustaining a superstructure. Having constructed



this arch of voussoirs only, and placed it upon piers of the same base and height as the arch *fig. 139.*, it balanced under the weight of $3\frac{1}{4}$ lb. On raising the masonry, that is, the wooden bricks, up to *a b*, the arch and pier balanced with $6\frac{1}{2}$ lb., or double of the weight which the arch and pier carried without the masonry. At the point 2, the structures stood firmly under a weight of 20 lb.; and, at 3, 28 lb. were not found too much for the structure to sustain. Upon raising the brickwork up three more courses, and removing the two angles *a d* and *e f*, the arch and pier just balanced under the weight of 28 lb. placed at the point 4.

These experiments with the Roman and Gothic arches show that the latter will support just double the weight of the former, under such circumstances as are described, and as are represented by the diagrams *figs. 139, 140, and 141.*

A Gothic and a Roman arch, of 10 in. span, composed only of voussoirs, having one end of each supported on the same pillar, or pier, of equal dimensions as that of *fig. 139.*, and placed,

not abutting, but at right angles the one to the other, balanced with the following weights on their crowns; namely, the Gothic arch with more than 6 lb., the Roman arch with more than 3 lb.

From these results it is manifest, that the stability of the single arch and pier is doubled by having one end of a second arch resting on the same pier, when the lateral force of the latter acts at right angles to the direction of the former.

(To be continued.)

REVIEWS.

ART. I. *Report of the Committee appointed at a General Meeting held at the Right Hon. the Earl of Euston's, M. P., in Grosvenor Place, on the 3d of March, 1836, for the Purpose of taking into Consideration Mr. Martin's Plan for rescuing the Thames River from every Species of Pollution; for the Improvement of the Wharfage, the Establishment of Two great Public Walks, and for other Objects of Public Utility and Importance; and to report their Opinion to another General Meeting.* Folio, pp. 33, 1 plate. London, Hancock, Middle Row Place, 1836.

MR. MARTIN, the celebrated artist, has for several years had a scheme in contemplation for supplying London with pure water, improving its sewerage, forming public walks and baths, and saving from utter waste an immense quantity of the most valuable description of manure. Mr. Martin, some years ago, published a part of his scheme, illustrated by engravings; but he has since enlarged and matured his ideas on the subject, and succeeded so far towards getting his plan carried into execution, as to have procured its examination by a committee of influential and scientific men. This committee have published their report, the title of which is given above; and we shall quote largely from it, conceiving that, in doing so, we shall at once be forwarding the views of our esteemed friend Mr. Martin and the members of the committee, and laying before our readers information original, instructive, and highly entertaining.

"The committee having held several meetings, at which Lord Euston presided, with a full attendance of the members, including Major-General Sir Patrick Ross, deputy chairman, and having deliberately, and with great attention, considered the various statements, facts, calculations, and designs which were laid before them by competent persons, in explanation and illustration of Mr. Martin's plan, have agreed to the following report.

"The supply of water to the metropolis," the report states, "continues as polluted as ever; nay, more so than it was when the first complaints were raised against it, seventeen years ago, in consequence of the additional number of drains terminating in the river established since that time. No attempt has been made, even by the water companies, to deny the truth of this assertion; and the Thames, to this day, receives the excrementitious matter from nearly a million and a half of human beings; the washings of their foul linen;

the filth and refuse of many hundred manufactories ; the offal and decomposing vegetable substances from the markets ; the foul and gory liquid from slaughter-houses ; and the purulent abominations of hospitals and dissecting-rooms, too disgusting to detail.

“ *Enumeration of the Plans proposed for improving the Supply of Water, divided into Three Classes.* — The plans hitherto devised to remedy so great a public evil, either by the water companies themselves, or by private individuals, and proposed to government or to parliamentary committees, have led to no satisfactory result ; for they either promised remedies ineffectual, or were attended with almost insuperable difficulties, particularly as regards the expenditure of public money, and the establishment of additional heavy rates on the consumers of water. Those plans may be divided into three classes : — 1st, those which propose the purification of the water, either by filtration or subsidence ; 2dly, those which suggest the pumping up of the water from a higher part of the river than where it is now obtained ; 3dly, those which recommend to draw the supply from other sources than the Thames, and convey it by means of extensive aqueducts to London. Respecting the *First Class* the committee entertain a well-founded conviction that filtration through sand (as in the case of the Chelsea Water-Works) is quite insufficient to free the water from animal impurities held in solution, though it produces a clear fluid, free from sediment and colour ; that filtration through charcoal, which would deprive the Thames water of part of the said impurities, is by far too expensive ever to be undertaken by the water companies ; and, finally, that the method of subsidence in reservoirs, adopted now by almost all the water companies, is not only ineffectual for the removal of the organic impurities held in solution in the water, but is also an imperfect method of depriving it of the muddy sediment found, to this day, at the bottom of all cisterns to which the water is conveyed. Of the *Second Class* it is only necessary to observe, that, unless all the water companies, north and south of the Thames, were simultaneously to establish their works as far to the west as at Teddington, no removal, to any part within the influence of the tide, could accomplish their intention of supplying pure water to the metropolis. The bill obtained last year by the Grand Junction Water Company, for establishing their engines and pumps below Brentford, has given general dissatisfaction to the householders of Westminster ; who held a public meeting in April, 1835, for the purpose of protesting against it, as a measure manifestly inefficient in its provisions towards supplying a less objectionable fluid. In regard to the *Third and last Class* of projects submitted to parliament, the committee need only to state, in passing, that the one which seems to have been duly considered by a select committee of the House of Commons, so late as 1834, and which was presented by the late Mr. Telford, involves so much difficulty, and the outlay of so exorbitant a capital for the supply of six only out of the eight water companies, that there appears to be no likelihood of its ever being carried into effect. It is not probable, indeed, that any government will authorise the expenditure of 1,200,000*l.* for the erection of two aqueducts, the one *sixteen*, the other *six* miles in length, according to Mr. Telford’s estimate, in order to bring water from the Verulam and the Wandle to assist six only of the water companies of the metropolis.

“ *Origin, Nature, Objects, and Description of Mr. Martin’s Plan.* — The inefficiency or impracticability of all these plans, and the universally admitted existence of a most serious grievance, which the best endeavours and unceasing vigilance of government have hitherto proved insufficient to remove, has, to this day, maintained the public mind, respecting this vital question, in that state of excitement which has now existed upwards of seventeen years. In this state of difficulty, it was given to the genius of Mr. J. Martin to devise the simplest, as well as the most completely effectual, plan for affording, at once, all that the public require, without injury to the rights and interests of the water companies, or interference with them ; but, on the contrary, with manifest benefit to them, by saving any further outlay of capital, which they

might think themselves called upon to employ in fruitless endeavours to satisfy public opinion. This plan may be defined in a single sentence: it consists in diverting altogether from the river every possible source of pollution within the London district; so that the water supplied from it to the inhabitants by the existing water companies shall become as unobjectionable as a noble river in its natural state ever offered to man: for, according to Dr. Bostock's evidence, given before the royal commissioners in 1828, 'The water of the Thames, when free from extraneous substances, is in a state of considerable purity, containing only a moderate quantity of saline contents, and those of a kind which cannot be supposed to render it unfit for domestic purposes, or to be injurious to health.'

"*The Manner in which Mr. Martin proposes to accomplish this Object is by the Construction of a close Sewer, 20 ft. Wide, and of adequate Depth, along both Banks of the River, commencing on the north near Millbank, and proceeding towards the Tower, round which it will pass, if required, to terminate near the Regent's Canal; while that on the south, beginning at Vauxhall, and proceeding in the direction of Rotherhithe, is intended to diverge thence, and terminate near the Surrey Canal. In order to dispose of the polluting drainage thus diverted from the river stream, and confined within these two sewers running parallel to the river, and with somewhat more than the declivity of its bed, Mr. Martin places two great receptacles at their respective terminations, so arranged and constructed, that the accumulation of all the drainage of the metropolis shall not be productive of the smallest annoyance or insalubrity to the nearest inhabitants. With this view, a system of ventilation will be established, both for the great sewers and the receptacles, which will prove equally simple and effectual, whether the committee adopt the one proposed by Mr. Martin himself, who has acquired much knowledge on this point, from having studied the ventilation of coal mines; or apply another, suggested by one of their members, equally competent for the task. In either case, however, the destruction of all noxious effluvia will be accomplished; a consummation which, coupled with the prevention (effected by the great parallel sewers) of the hitherto frequent inroads of the tide into the lower ends of the common sewers, and the consequent backing of the drainage in them, together with other measures for excluding all offensive smells through the street gullies, will render the London drainage more perfect, and the labours of the Commissioners of Sewers less difficult.*

"*Erection of Two Lines of colonnaded Wharfs.*—Great and important as the first object unquestionably is, which Mr. Martin's plan is destined to accomplish, it is not the only benefit which the metropolis will derive from its being carried into effect. Although it seldom happens that, in adapting any very extensive remedy to a public grievance, or in undertaking a work of magnitude for the good of the people, local and individual interests are not in some degree injured or invaded, Mr. Martin's plan has the additional merit of being little exposed to such an objection. On the contrary, his plan, by the next object which it embraces, and which is, as it were, its natural consequence, is calculated to add to the value of most of the individual interests affected by the line of its operations. That object is the erection over the two sewers of a line of colonnaded wharfs, which will afford in front of the present wharfs additional room; increase the convenience of the merchant and the labourer; facilitate the operations of trade; give greater security to property landed from vessels and barges; improve the navigation of the river by the assistance of the subjacent sewers, which will constitute uniform embankments; and, lastly, add some portion of time to the number of hours during which the craft can deliver or take in their cargoes. The immense and recent advances which mechanical science has made in this country will enable the architect and engineer employed in the construction of these wharfs to take advantage of their uniform arrangement, and apply, through the engines required for the ventilation of the two great sewers and receptacles, either to the entire range of wharfs, or to any part of it where it may

be required, the power obtained from atmospheric pressure acting on a vacuum, which has been so successfully applied, of late years, to cranes and other machines, and which, in this case, it is presumed, would be gladly adopted by the proprietors of storehouses, manufactories and breweries situated on the banks of the river, whereby another great advantage to those proprietors would be obtained from Mr. Martin's plan. Respecting this useful application of mechanical science, the committee have the satisfaction of being able to refer to the opinion of one of their members, who is perfectly acquainted with the subject.

Formation of Two extensive Quays, or Public Walks.—But even this great metropolitan advantage, secured by Mr. Martin's plan, must yield the palm to another of a more popular and attractive nature, arising out of the accomplishment of a third object contemplated, also, by Mr. Martin. The Committee, therefore, feel particular satisfaction in having further to report, that the same plan offers the most favourable opportunity of establishing, at a comparatively small expense, a magnificent promenade on each side of the river, unequalled in Europe, by the conversion of the roofs of the colonnaded wharfs, just described, into parapeted walks, to which the public will be admitted gratuitously on Sundays, and at the smallest rate of charge on every other day in the week. It is thus that the patriotic idea of Sir Frederick Trench will be realised, in respect to the erection of quays on the banks of the Thames, without the liability to the several objections which powerful individuals and public bodies made to the purely ornamental and architectural project of that gallant officer, who, with high-minded liberality, has declared Mr. Martin's plan to comprise more than his own, to be greatly superior in usefulness to the public, and to deserve his utmost support. It is thus, also, that the wishes, so often expressed, of late, by parliamentary committees, of affording to the mass of the population the luxury, salubrity, and recreation of great public walks, in the very heart of London, will be accomplished at once, and on a more extensive scale than has ever before been contemplated.

Magnificent Architectural Promenade.—It would be superfluous, on the part of the committee, to undertake to prove, that the establishment of a grand and magnificent public walk on each bank of the river, and behind a most crowded line of habitations running east and west of the metropolis, must be of infinite service to the neighbouring inhabitants, by affording them an opportunity of taking exercise in a reserved public walk (well calculated, too, for women and children), and of enjoying a free and open atmosphere during the days and hours not devoted to labour, besides the benefit of a more direct intercourse. To these advantages they are certainly strangers at present, owing to their remote position from the parks, and from every other general resort of pedestrians; and, although a select committee of the House of Commons did recommend, in 1833, an extension and improvement of the embankment along the river from Limehouse to Blackwall, at a considerable expense to the parishes within that district, so partial a measure could only be useful to those whose residence is contiguous to the walk, without being of service to the inhabitants of the more central parts of the metropolis along the north bank of the river, where it is most required. On this point the committee have obtained the opinion of one of their body, who is a medical man, and who, having practised for the space of twenty years as physician to three extensive public institutions in London, principally connected with the relief of the sick poor of the river districts, has had numerous opportunities of ascertaining the effect of the impure water of the river, of the confined air of the streets and alleys adjoining to it, and of the want of exercise, on the general mass of the inhabitants of those districts. The committee specially refer to that opinion, in addition to that of the witnesses examined before the parliamentary committee of 1833, principally because, in a question so entirely belonging to the consideration of public health, the long experience of a medical witness is more likely to carry weight with those who have the

protection of that health in their keeping. The want of means to take proper walking exercise, after a long day of laborious exertion, impairs the vigour of the body, produces among the working classes a morose and melancholy disposition, and engenders a spirit of dissatisfaction, which domestic privations are too apt to increase. Such feelings, in their turn, hurry their victims on to the resorts of the drunkard and the abandoned; where, if they imbibe not the spirit of discontent, they most assuredly sap the very foundation of their own health, and that of their future offspring. The committee, fully coinciding, also, in the sentiments expressed in the report of the select parliamentary committee, just alluded to, on public walks, refer with particular pleasure to the part of that report where the peculiar natural advantages which the metropolis might possess in respect to public walks on the banks of the Thames, are especially recommended to the consideration of the house of Commons.

Protection of Property. — There is one more public benefit, which the establishment of a great walk on each bank of the Thames is calculated to secure, and which, hitherto, has not only remained unaccomplished, but has even escaped notice, namely, the protection of property on the river by night. It is a well-known fact, that, taking advantage of the many hundred craft which are left at night without a watch, and of the darkness, which conceals evil deeds, youthful thieves and others commit considerable depredations on the river. The brilliant illumination by gas of the great walks, and, if necessary, of the wharfs too, may be expected to put a salutary check to such guilty practices, and diminish the serious losses consequent thereupon; while the facility which the same walks will afford to the Thames patrol, of overlooking every movement on the river, will complete this not insignificant advantage to the public.

Formation of Public Baths. — Connected, also, with the establishment of the great quays in Mr. Martin's plan, it will be found that an opportunity is afforded for the formation of large public baths, contiguous to the river, and so arranged that they shall not in the least interfere with the purity of the river stream. Respecting the necessity and utility of public baths, as far as regards the health and cleanliness of the working classes in London, it is scarcely necessary to cite any authority. Upon that important subject, however, as well as on the general effect which the extensive improvements and total changes effected, in the state of the river and its banks, by Mr. Martin's plan, will have in greatly promoting the salubrity of the populous districts near the Thames, the committee refer, with confidence, to the experience of the same individual whose opinion on public walks they have received, and who derives that experience from repeated observations made in London, and in all the principal capitals of Europe, constituting a valuable corroboration of the testimony of well-qualified witnesses given before the select committee on that subject.

Preservation and Application of Manure. — The drainage received into the great receptacles, before mentioned, will be converted into manure, according to the method and practice very extensively adopted in China, on the continent of Europe, and of late years, also, in some parts of Scotland. This will be conveyed by well-devised arrangements, and under the influence of scientific measures, to different parts of the country, in covered barges, or properly constructed land-carriages. The value of this species of manure is almost incalculable. The best authorities place it far above every other, as containing in much greater abundance the very elements of which vegetable substances are composed, and on which their existence and growth depend. By saving, therefore, the vast quantity of it which has hitherto been wasted in the metropolis, a *fourth*, and most important, benefit, that of fertilising, and rendering the land considerably more productive, will be conferred on the public, through the identical plan, which alone can secure to us the luxury of drinking wholesome and unpolluted water.

Financial Statement. — On the financial part of a plan so simple, yet so

gigantic in its results, a plan, too, which seems encompassed by fewer difficulties requiring pecuniary sacrifices, than are generally met with in great public schemes, the committee do not think it necessary to dilate at length. They have, however," produced an estimate (signed, *R. Dixon, Fellow of the Institute of British Architects*), by which the expenses of construction are upwards of 1,000,000*l.* sterling; and another of income and expenditure, by which, after paying a dividend of 8 per cent., there appears a surplus balance of 206,000*l.*

The principal source of income is the manure, for which it is calculated to produce 200,000*l.*

The report is dated London, April 23. 1836.

App. I. is a historical epitome of the water question from 1810 to 1835.

App. II. is a statement and calculation of the human impurities which enter the river Thames in the London district.

App. III. is a statement of Mr. James Mills (Engineer), Mr. Joseph Evans, and Dr. Bostock, as to the effect of the tide on the Thames water in the London District.

App. IV. is an enumeration of the several plans proposed for obviating the grievance of impure water complained of by the public.

"App. V. *Remarks on the Inefficiency of Filtration and Subsidence, as Means of purifying the Thames Water of the London District, so as to render it fit for Domestic Purposes; founded on indisputable Chemical Facts.* (Delivered to the Committee by A. B. Granville, M.D., F.R.S., one of the Members appointed to enquire into that Subject.) — The permanent state of impurity of the water derived from the London district of the river Thames being admitted on all hands, and the plans for taking the supply, either from a much higher part of the river, or from other sources than the Thames, having never been carried into effect, it becomes evident that the only chance which the public has hitherto had, up to the present period, of seeing their daily beverage, and so important an article of diet as water, cleared of the filth by which it is polluted at the very source of its supply, depends on two methods, both of which the pressure of public opinion has compelled all the water companies to adopt, since the government and parliamentary enquiries into the supply of water to the metropolis: these methods are subsidence in reservoirs, and filtration.

"All the water companies in London have now reservoirs, in which the water is suffered to rest until the sediment has subsided, before it is delivered to the tenants. Assuming that this process is universally and *bonâ fide* adopted, there are two facts which prove, at once, its inutility for the purpose required. The first fact is, that the water received into the tanks, or cisterns, both with the ordinary and high service deposits, even now, at the end of some days, a considerable portion of muddy sediment, and just as foul as had been observed before the great enquiry had led to the adoption of reservoirs for the subsidence of the impurities of the water.

"Dr. Bostock, in his evidence before the select committee of the House of Commons in 1834, stated, that, even at the present time, the water supplied by the New River Company to his cisterns, not only deposited much of its mechanical impurities after rest, but remained still brown and muddy, and was far from being pure at last. The same remark has been made by several other witnesses, and by myself more than once, with regard to the supply I derive from the Grand Junction Water Company. Within the last few weeks, I had occasion to clean the upper cistern at the top of the house, on account of some fracture in the bottom lead, when I found two inches of thick, filthy, and foul-smelling deposit in it, although the operation of cleaning the same cistern had been performed only twelve months before. Indeed, the water in the said cistern, placed at an altitude of ninety feet from the street, does never look otherwise than like dirty pea-soup, owing to the frequent stirring up of it, by the coming in of the fresh supply three times a week. The second fact is, that, supposing even the water to be served without any sediment whatever, still the highly soluble parts of that peculiar extractive animal matter, which,

by the experiments of Berzelius, is proved to constitute the distinguishing character of human stercoraceous substances, would be present, and is actually present, in the clear liquid, to the extent I have already mentioned. This soluble matter amounts, according to the celebrated Swedish chemist, to sixteen parts in every hundred, of which sixteen parts one and a quarter only are salts, and the rest the peculiar animal matter in question, which, certainly, is not fit to be reintroduced into the living body! But this is not all; for, according to another eminent chemist (Le Sage) the proportion of soluble matter in the human ordures, when it has passed into a state of putrefaction (as most of those must be which are supplied by the sewers to the Thames) is nearly doubled!

"The process of subsidence might, indeed, be made to free the water altogether of its animal impurities; but, in that case, the state of rest of the water to be so purified ought to continue for a much longer period of time than the companies have allowed, or can afford to allow; and even then, instead of the soluble animal impurities, removed by the lengthened process, there would be substituted the presence of soluble salts, increased to four-fold their quantity, originally contained in the water. This curious fact was ascertained by Dr. Bostock, who communicated the result of his interesting enquiry to the Royal Society in 1829; from which it appears that, if the Thames water be suffered to remain at rest, completely undisturbed, for a period of many weeks, fermentation will take place, in consequence of the presence of the softer portions of human ordures; the liquid will become clear, with the exception of a small proportion of insoluble sediment; it will lose all unpleasant smell, taste, and colour; and present, instead of animal impurities in solution, an increase of its ordinary saline contents. This increase is to the extent of between two and three times, with regard to chalk, or carbonate of lime; of between five and six times, with regard to gypsum, or sulphate of lime; and of twelve times the usual quantity, with regard to common salt, or muriate of soda. By this change in the relative proportions of its saline contents, the water ceases to be soft, and becomes hard, inasmuch as each pint of it is found to contain four grains and $\frac{3}{8}$ of saline matter. Supposing, therefore, that the companies were to establish reservoirs of such magnitude as to allow the water to be lodged undisturbed therein, during a period of time sufficiently long for the depurative process by spontaneous fermentation to take place, which is to destroy all animal impurities in it, they would still supply the public with what, although clear and inodorous, would contain enough of chalk and plaster of paris to multiply, and render more severe, the various and innumerable degrees of derangements of the stomach and bowels, which so generally prevail in, and are almost peculiar to, this metropolis.

"The celebrated Dr. Trotter, physician to the fleet, and author of a valuable work on the preservation of the health of seamen, had already observed this curious fact on board of the King's ships during long voyages, which explains the common notion entertained, that Thames water is the best that can be used on ship-board; a notion which has been actually made use of as an argument to prove the purity of that water. Dr. Trotter states that this water, contained in caaks, becomes putrid soon after one or two months of its embarkation; that a quantity of inflammable air is disengaged from it; that it gets very dark and offensive, throwing down a black deposit, and at last becomes clear and palatable. It was left to an equally eminent physician, and a much superior chemist, in our days (Dr. Bostock), to discover the rationale of such a spontaneous process of depuration in the Thames water of the London district.

"Filtering through sand and charcoal, as executed to some extent with the water of the Seine, in Paris, would certainly remove the entire of the coarser sediment, and the greater part of the animal impurities, from the Thames water; but even this process is incomplete with regard to the latter benefit; since, according to recent experiments, a cubic foot of the water, so filtered, is still eighty-five grains heavier than the same quantity of distilled water.

Moreover, the enormous quantity of charcoal that would be required, even by this imperfect, though the best of the processes yet proposed for the purification of the Thames water, would naturally entail an expense which must preclude the water companies from adopting it. As to any other mode of filtering Thames water, it is useless to waste a single word about it; since it has been established by the experiments of Parmentier and Cuchet, that filtration very imperfectly deprives water of its impurities, in which animal and vegetable matter have been long in solution; and even Mr. Simpson, the engineer, who advocated the system of filtration adopted by the Chelsea Water Company, and superintends it, admits in his evidence before the select committee of the House of Commons in 1828 (See Report, p. 15.), that 'the process of filtering will not purify water which should contain many ingredients chemically dissolved.' After all, what serves subsidence or filtering in the case of such water as that of the London district, supplied to the metropolis has been proved to be! Would any one, knowingly, and with cheerfulness, drink a tumbler of water from a river spring, which should have previously run through a succession of cess-pools, and afterwards been filtered through sand and gravel, because it may then appear clear and transparent? Yet such is the case with us, collectively, who drink, in some way or other, the Thames water of the London district!

"What, then, are the conclusions to be derived from the various parts of the present statement in reference to the supply of water in London? They are as follows:—

"First, That the water of the Thames, in front of London, is *always* in a most intense state of pollution.

"Secondly, That the process hitherto adopted for purifying it (subsidence) has proved insufficient, and leaves the most objectionable impurities still behind in the water.

"Thirdly, That even a more effectual process (fermentation, supposing it to be adopted, notwithstanding the great waste of time and money which it would entail) would only substitute one evil for another, as far as the health of the consumers is concerned.

"Fourthly, That the most perfect, even, of all the processes of purification (filtration), were it practicable, would not free such polluted water as that which we derive from the river (where it passes through London) from all its disgusting and injurious properties.

"And that, therefore, the only real remedy is to adopt the plan which turns away from the river the numerous streams of impurities that flow into it at present. And that the evil to be thus remedied is one fully, experimentally, and mathematically demonstrated; one which is of most serious injury to the health of a million and a half of the King's subjects; one, in fine, to which the public authorities cannot much longer refuse their most earnest attention.

"App. VI. *Mr. Telford's Plan for amply supplying the Metropolis with pure Water by six of the present Companies.* (Submitted to the Committee of the House of Commons in 1834.)—It consists of two divisions. One refers to the supply by the three western water companies on the north side of the river; the water to be taken from the Verulam, and conveyed to a reservoir on Primrose Hill, by an aqueduct sixteen miles in extent. The total expenditure of this plan, in round numbers, is stated at 800,000*l.* The second division of the plan is to supply with pure water the district on the south side of the Thames by the three southern water companies, the water to be derived from the Wandle at Beddington Park, to a reservoir at Clapham Common, by an aqueduct six miles in length; and at a cost, in round numbers, of 400,000*l.* Total expenditure for the supply of the six companies, 1,200,000*l.* If to these we add Mr. Mills's plan for supplying the two remaining companies, namely, the New River, and the East London Water Company, with pure and soft water for the use of their tenants, taken at Ware from the river Lea, and conveyed to Newington by a conduit of twenty-eight miles, we shall find a total expen-

diture required for settling the "much-vexed" question of the water supply to the metropolis, to amount to 2,060,000*l.*, and the length of aqueduct necessary for the purpose equal to forty miles.

"App. A. No. I. *Mr. Martin's Statement of the intended Construction of the Two great Sewers parallel with the Banks of the River Thames.* (Communicated by him to the Committee.) I propose that on the north bank, and for the western extremity of London, a receptacle should be formed above Vauxhall Bridge, for the purpose of receiving the King's Scholars' Pond sewage, and all the other minor drainage of that quarter. For the body of the city a grand sewer must be formed, to commence about the bottom of College Street, Westminster, near Millbank, running parallel with the bank of the river, and receiving all the drainage from the North part of the metropolis, which now enters the Thames. This grand sewer should be constructed of either granite or iron, the top forming a quay, or line of wharfs, which should be above the highest possible tide, so as to secure the houses upon it from inundation, where the banks are now so low as to subject them to it. The sewer should, also, increase in depth as it continues its course towards the Tower, where it should turn off, using the moat, if permitted. In the event of that not being allowed, it would pass round the moat, behind the London Dock, along Ratcliffe Highway, Brook Street, and the intermediate street, to the first convenient space near the Regent's Canal, where the grand receptacle should be established for the whole drainage.

"For the south side of the river the same plan should be adopted, commencing near Vauxhall Bridge, passing along the bank of the river to Pickleherring Stairs; then branching off through Rotherhithe to any convenient spot adjoining the Grand Surrey Canal, where the grand receptacle for the south side will be constructed, on the same plan, and for the same purpose, as the receptacle near the Regent's Canal on the north.

"Provisions will be made for preventing the choking or bursting of the great sewers, particularly that on the north bank, during extraordinary land-floods, and also for clearing their interior from any obstruction that may occur. The first object is to be accomplished by having, in the side of the great sewer next to the river, and at the upper part, opposite the end of each great street drain, a flood-gate, nearly six feet in length; so that if the sewage should ever rise so high, it would at once escape into the river. To afford facility for cleansing each great covered sewer, there should be large flood-gates to the depth of the sewer, to be opened when necessary.

"The second object will be effected by the erection of a light iron gallery, about three feet wide, and six feet and a half from the top of the drain, to be supported on one side by the wall towards the river, and on the other by suspending light iron rods from the roof. A man would pass along this gallery, carrying a safety lamp, to see and remove any obstructions that might accidentally have occurred in the sewer. The entrance to this gallery should be through the smaller flood-gates, before mentioned, in the side next to the river, and they should be left open while the man is in the sewer, to admit some portion of light and air.

"The depth of the great covered sewer would be twelve feet from the highest high water mark known to the base of the sewer. The declination should be twelve inches in the mile generally, and eighteen inches where, by its course, it takes one or two turns. By this arrangement the bottom of the great sewer will be sixteen feet above low water.

"App. B. No. I. *Manner in which Atmospheric Power is intended to be generated and applied, in that Part of Mr. Martin's Plan which relates to the Structure of the Wharfs; with the Employment of that Power for moving every Sort of Machinery.* (Communicated to the Committee by Nathaniel Ogle, Esq., One of its Members.) — In another document which I have laid before the committee (Appendix D. I. Ventilation, 2.) I mentioned that, over the great receptacles fires will be placed for the purpose of destroying the effluvia arising from the fermenting mass, and for ventilating the general system of the Lon-

don drains, as well as the two great parallel sewers. The heat from those fires will not be wasted, but used to generate steam, which, besides working, by engines, the pumps destined to remove the manure from the receptacles, in the manner described by Mr. Martin, may be applied to another great and important object; namely, the creation of a source of power, transferable with certainty to every spot along the whole line of wharfage, and to every manufactory requiring power for every conceivable purpose. The simple and undoubted method by which this object is to be attained I shall now proceed to describe.

"The engines already mentioned, by being connected with exhausting pumps, would draw out the air from the hollow architrave over the wharfs, as well as from each hollow pillar by means of pipes, and thus create a vacuum in tens of thousands of cubic feet, of hollow pillars and their connexions. That vacuum enables the atmospheric pressure to be made available as a power along the entire range of wharfage, and in all its ramifications; so that every wharf could be supplied with a machine of any required power, for raising merchandise, or other operations; while to every adjacent manufactory such a power could be distributed with the utmost certainty and facility. Even the removal of the manure from the great receptacles might be effected by means of this power, instead of consuming the power of the steam-engine for that purpose. If, near the upper part of the works, where the great parallel sewers begin, flood-gates were constructed, so that, if required (particularly in summer), the whole main sewer could be washed perfectly clean, the water might, in that case, be used, before it flowed into that main, as power to increase the vacuum. Its agitation by a wheel would impregnate it with more atmospheric air, and thus render it capable of performing a double duty; that of cleaning the great sewers, and of supplying to the fires an additional quantity of the supporter of combustion. Nor is this a superfluous provision of means; for, in proportion as vacuum power will become more generally appreciated, through its establishment in this great architectural structure, and consequently more in demand, a greater supply of fuel will be required, as well as a greater supply of air for its combustion.

"I may here remark, that this atmospheric, or vacuum, power, in itself so simple, yet so efficacious, and so perfectly transferable to any distance, as well as through every ramification of Mr. Martin's structure, that it may be used either as a mighty engine, or, by subdividing it, as a power to facilitate the most delicate fabrications, is not new. The Mint works at Utrecht are carried on by it; so are those of the Mint at Rio Janeiro. Mr. Forster, of Stourbridge, has had one at work for some years. Several sugar-houses in the city raise to the summit of the loftiest warehouses casks of sugar by it. Messrs. Brown, near Manchester, have a sixty-horse power of this sort at work. At Hornebush, in Cornwall, there is one placed at four hundred fathoms from the primary power; and, sooner or later, England will witness, after the completion of Mr. Martin's plan, the general extension of this power of the atmosphere, which has long been known. Dr. Alderson of Hull used it for many years; and a very imperfect application of it has also been made to some of the works in our own Mint. The present improved system of it is due to that ingenious and experienced engineer, John Hague, who some years since drained the district of Littleport and Downham, which had been pronounced irreclaimable. When this power can be hired, people will gladly take it in preference to steam power; and thus, by creating it, and letting it out in different parts of Mr. Martin's works, on the banks of the Thames, we shall lessen the volumes of smoke which now cross the river from the south bank and pass over London, while we increase the revenue which may be expected to flow from the execution of Mr. Martin's plan.

"App. C. No. I. *Architectural Outline of the intended Range of Wharfs and Public Walks.* (Presented to the Committee by J. Martin, Esq.)—The style of architecture best adapted to my plan is either Tuscan or Doric; but the buildings on and near the public walks should be suited to the locality: for

instance, the Corinthian order should be adopted to carry on and compose with Somerset House. The western side of Waterloo should be Tuscan, since that noble structure is of that order; and near the houses of Parliament Gothic should be used, so as to harmonise with them and Westminster Abbey. Thus there would be grandeur, simplicity, varied interest, and complete harmony, without monotony. There should, likewise, be handsome landing-places, with terraces, and beautiful gardens, with fountains, where there are spaces fit for the purpose, and there would be many such on the large portion of recovered ground. Upon the recovered ground, between Westminster Bridge and Hungerford Market, the houses of parliament (if the sites for them be not already determined upon), or any other great public buildings, might be raised. I should, however, give the preference to the formation of gardens, as they would form so splendid an addition to the houses at Whitehall, Privy Gardens, Northumberland House, &c. The unsightly coal wharfs and sheds, which at present interrupt the prospect and circulation of the air on the banks, should be compensated for, and removed either farther down, or higher up the river. Near to the Grosvenor Canal would be an admirable spot, affording every facility for transporting the coals from the river, without impeding other traffic, as is the case at present, owing to the great coal waggons going from Scotland Yards, and other parts, into the leading streets. A flight of steps should lead from each end of the bridges to the public walks, which would pass under the arches. The proposed plan for a new bridge opposite Hungerford Market will not only interfere with that fine structure, Waterloo Bridge, but injure the grand space between that and Westminster Bridge, which is already sufficiently near to the former. By my public walks, the communication between the two bridges, and, consequently, between the two sides of the river, would be made more direct; and thus a greater facility, and pleasant means of proceeding from one point to another, would be afforded; whilst from the same public walks our numerous bridges would appear to additional advantage. These improvements would greatly increase the number of water parties and regattas on the river; and, by thus giving increased interest and life to the scene, add much to the pleasure of those who viewed them from the shore, and likewise benefit the various branches of trade in the vicinity.

"App. C. No. II. *Extract from the Report and Evidence laid before the House of Commons, by a Select Committee appointed February, 1833, on the Necessity of Public Walks, and the Propriety of establishing Public Baths.*—It cannot be necessary to point out how requisite some public walks, or open spaces, in the neighbourhood of large towns must be, to those who consider the occupations of the working classes who dwell in them.

"*Questions to Mr. Stock, a Magistrate for the County of Middlesex.*—'The committee have been told, that, from the Hampstead Road, taking all round the north and east of the metropolis, until you come to the Thames, there is no spot reserved as a public walk, or open space, in which the middle and decent classes resort to walk with their wives and families, except a public thoroughfare? That is a perfectly correct statement.—Is it not your opinion that, with the increasing population, and numerous buildings and enclosures, it would be highly desirable for the health and comfort of the middle and humbler classes that such public walks should be provided? I think it is imperatively called for with a view to their morals and comfort.—If some provision could be made to provide public walks, and places of exercise for the humbler classes, to which they might be admitted under proper regulations, on the payment of a trifling sum; do you think it would be of great advantage to them? It would be the best thing that could be done for the health, morals, and satisfaction of the working classes.—Would such places wean them from public-houses and drinking shops, into which they are now driven by having no source of amusement afforded to them? I have no doubt.—Do you believe they would be willing to pay a trifling admission for the purpose of having a place provided, to which they might resort when they had a little spare time? There is no doubt of it.' (Page 17, 18, 19.)

"Several other witnesses, magistrates and coroners, having been examined respecting these several points, confirmed the statement and evidence of Mr. Stock, in as far as regarded their respective districts, north and south of the river, in which they had resided for many years.

"Most of the suggestions thrown out by these witnesses, in the course of their evidence, refer to the establishment of public or reserved walks along the margin of the river. Mr. James Bailey states, that the walk which would be most appreciated by the inhabitants on the south side of the Thames, would be one placed along the margin of the river, because there is always something passing up and down.

"But by far the most important evidence is that given by Thomas Saunders, Esq., one of the wardens of St. Saviour's; who not only lays great stress on the necessity of public walks, but also on the superiority of those established near the river, respecting which his observation is worthy of being quoted, as bearing on a part of Mr. Martin's plan.

"'If the space from Back-end towards Blackfriars' bridge were improved, would it be eligible for a public walk? It would be of immense benefit to the public.—This space, by some improvement, and by carrying out the embankment might be made a place fit for a good public walk on Sunday evening? I think it might.—Have you formed any opinion as to the expense of this improvement? I have not formed any idea of the expense, neither am I capable of doing so; but, if the proposed measure should not be found to impede the navigation of the Thames (which, speaking as an unscientific person, I should say it would rather benefit than otherwise), *the proprietors of wharfs, if they had additional ground laid into their property, might not raise any objection.*' (Page 31.)

"Mr. Saunders seems well versed in the history of the banks of the Thames, and exposes the several and gradual encroachments made on the rights of way once possessed by the public on both banks, particularly on 'an actual space forty-two feet wide, from the Temple to the Tower, on the north side of the Thames, which was granted by parliament, and placed at the disposal of Sir Christopher Wren, for the erection of a public walk.' This space, however, either from the laxity of the city authorities, or of the public, or of parliament, has, from gradual encroachments, first by cranes, then by sheds and counting-houses, at last got up into brick buildings, and the citizens of London have been deprived of all that splendid intention. (Page 31.)

"A question was put to Mr. Robert Sibley, an architect and surveyor, whether he thought that 'an embankment might be made in the vicinity of London, on the north side of the Thames, which would form a very fine walk for the inhabitants?' 'I think nearly the whole line of the Thames might be embanked, so as to form a quay.'—'Would the expenses be very great to make a walk of sufficient length in the situation you speak of?' 'It would be considerable, but I should think a portion of it might be defrayed by letting off for wharfs.'—'Would not a walk be healthy from the freshness of the air coming in with the coming tide?' 'Yes, I should think, the best air you could possibly get.'—'Does your remark about the practicability of making a public walk on the banks of the Thames apply itself equally to the other side of the river?' 'Equally so.' (Report, page 17.)

"The same committee directed their attention to the subject of public baths, as will be seen from the following interlocutions with Mr. Stock:—

"'Are there any bathing-places reserved upon the river Lea, or on the banks of the Thames, to which the humbler classes might resort to bathe?' 'None whatever, and they are prohibited by orders from the police from bathing. The place most frequented for bathing now in our neighbourhood is the Canal from Limehouse to Bromley. They are prohibited, and boards are fixed prohibiting them from bathing there; but they do it at their peril, being sometimes taken into custody for it.'—'This prohibition arises from a desire to promote public decency?' 'The establishment of separate baths would certainly do all that, and it would be very conducive to health.'—'Might not

such a thing be established at no very great expense, and be at the same time a great benefit ? ' It might.'

" App. C. No. III. *Observations on the Importance of Walking Exercise for the Preservation of the Health of the Working Classes ; on the many Advantages that would result, in a Medico-political point of View, from the Improvements produced by Mr. Martin's Plan in the State of the River, and of its Banks ; and lastly, on the Necessity of encouraging the Practice of Bathing among the humbler Classes of the Metropolis.* (Presented to the Committee by A. B. Granville, M.D., F.R.S., one of the Members.)—Nothing is more useful to the preservation of health than bodily exercise, and the open air. In large and populous cities, where the working classes are deprived of the means of enjoying either of these blessings, after their heavy day's labour, we find the hospitals and infirmaries crowded with invalids. London stands preeminent in this respect ; and, although the annual mortality, in every hundred sick persons, be inferior to that observed in most of the continental capitals, owing to superior medical treatment, it is nevertheless true, that there is always a much larger proportion of people suffering from acute, as well as chronic, disorders in London (and, consequently, more pauperism and inefficient population), than any where else. There are not fewer than sixteen hospitals, and twenty-six acknowledged dispensaries, in the metropolis, besides the numerous parochial infirmaries, which are generally large ; and they are all fully engaged in alleviating human bodily sufferings. It is principally the sedentary life, which the working classes lead, that occasions this state of things. Want of the means of taking exercise produces, moreover, in the same classes of people a melancholy and morose disposition, and a spirit of dissatisfaction, increased by the want of domestic attraction, and impaired health. These, in their turn, hurry their victims on to the resorts of the drunkard and the discontented ; where, by indulging in the temptations which the place offers, they sap the very foundation of their own health, and that of their future offspring. An inspection of the children of these classes, in the rising generation, proves too well the truth of this assertion.

" Were it not for the high winds, which so frequently sweep up and down the river, we should, most assuredly, have on the shores of the Thames those serious epidemic disorders which infect the banks of the Tiber, and, occasionally, those of the Danube at Vienna ; and which are to be met with, even on the banks of the Thames in very sultry seasons, and during any considerable prevalence of calm weather. But even the benefit which an ascending and descending current of air is known to generate, by fanning the infected atmosphere of the banks of the Thames, will be a hundred-fold greater, and, indeed, most complete, whenever that current shall be made to sweep up and down the river, between two lofty embankments, free from polluted mud and its emanations. In the case of the inhabitants of the Tower, much as they feel the depressing effects produced by their situation, owing to the present state of the river (effects which I have had professional opportunities of ascertaining), the mischief to which they give rise would be much more considerable, did not the dwellers of those buildings stand on an elevated platform, as it were, with a sort of promenade in front of the river. Hence, it is evident that a plan like the one which the committee is engaged in developing and supporting will reckon, among its many and manifest advantages, that of giving to the neighbourhood of the river a higher standard of salubrity.

" If, on the score of public health, the effect of embankment, north and south of the Thames, throughout the London district, is thus rendered manifest ; on the score of public comfort and public interest, that effect will not be less conspicuous. On these points I quote with particular satisfaction the clear and convincing proofs adduced to the committee by one of its members, to whom we are indebted for the application of vacuum power in the structure of Mr. Martin's wharfage. His words are as follows :—

" ' The navigation of the Thames would be materially improved, because :—

“ 1st. An uniform surface, on both sides of the river, would remove the reflecting and baffling currents, which are now caused by the inequality of the wharfs, and the jutting out of encroached quays; projections which those reflected and baffling currents render, at times, dangerous of access.

“ 2nd. The stream, being so little diminished by the intended structure, the mean elevation of the water would not be perceptibly affected; and, consequently, the improved state of the drainage of the lower lands (which has ensued from the lower level of the ebb, since old London Bridge has been removed) would not be injured.

“ 3rd. The currents, being no longer reflected, shoals would not be produced, as at present, and the general scouring effect of the water would act more uniformly, and tend to keep the main channel of more even depth.

“ 4th. The purified condition of the water would be followed by the return of the fish to the river stream, the present absence of which, and its cause, are fully made out in Mr. Goldham's evidence.

“ That individual says, ‘ I was yeoman of the market (Billingsgate) twenty-five years ago; and at that time there were four hundred fishermen, each having a boat and a boy, fishing above and below London Bridge; and now there are not two hundred men engaged in this fishing, and many of them are selling off their nets and boats.’ ”

“ Any injury committed against a portion of the maritime population of the country is ever to be deprecated, and becomes a subject of the most serious consideration of government. To render scarce, by careless and imprudent measures, the supply of any article of food to the public, is another subject of not inferior importance. A revival, therefore, of the fishing in the river would form no paltry addition to the benefit to be expected from the adoption of this great work.

“ It has likewise been remarked by Mr. Britton, in committee, and also in his public lectures, that ‘ the perpetual accumulation of solid matter in the Thames must ultimately fill its channel, derange its course and purposes, and, like the classical Tiber, become rather a curse than a blessing to the city which adorns its banks.’ ”

“ We have, lastly, another advantage connected with public health and comfort, which will be derived from Mr. Martin's plan; and that is, the facility afforded by it for establishing public baths contiguous to the river.

“ Two extensive reservoirs, surrounded by light and appropriate buildings, might be established, the one in some convenient spot, to the east of the metropolis, not far from the river; the other, situated under similar circumstances, to the west; each of which, by catching the stream of one of the clear rivulets (that now flow into the Thames) before it reaches Mr. Martin's great sewer, would form a large public bath, where people might, for a very trifling charge to them, indulge in the luxury of procuring bodily cleanliness, and the enjoyment of swimming exercise, without exposure of their persons, and in water which shall not disgust them, as the river stream does at present. The water would necessarily be kept in a state of purity by the uninterrupted flow of a fresh stream into the reservoir, and the possibility of partially emptying it into the great parallel sewers. Such establishments should, as far as possible, be within the reach of the most crowded districts near the Thames, where the blessing of being able to bathe in clean water, at a cheap rate, is most needed in the metropolis. It is a lamentable fact, that in point of bodily cleanliness, the working and inferior classes of the population of London, particularly the females and children, are lamentably deficient. Although the English, compared to other countries in Europe, are by no means a bathing nation, there is some excuse for them, in the difficulties thrown in the way of their more frequently adopting so wholesome a practice. Of a million and a half of inhabitants in London, not so many as fifty thousand, perhaps, repair, during the summer, to the banks of the Thames, or to those of the Serpentine river, to the canals, or to some of the reservoirs near London, for the purpose of bathing. There, even, they are met by restrictions

and regulations calculated to check their inclination; whereas a wise government ought to avail itself of every legitimate means, and seize every proper opportunity, of encouraging it, and thus render the practice of bathing a national habit. On this subject the evidence, which accompanies the report of the parliamentary committee on the public walks, is full of information confirmatory of the opinion I have just expressed; and is calculated to impress government with the conviction, that the time is arrived when they must attend to it.

"App. D. No. I. *Receptacles. Description of the great Receptacles for the Drainage conveyed by the Two great Sewers, with a Waste Receptacle to be used in Cases of strong Land Floods, and High Tides, and Manner of removing their Contents.* (Presented to the Committee by J. Martin, Esq.) — The grand receptacle, at the end of each of the great covered sewers, should be fifty feet deep, one hundred yards long, and thirty yards wide. A division down the centre, in a line with the mouth of the sewer, separates it into two equal compartments. A flood-gate placed at the mouth of the great sewer will open, by means of a lever (like the long lever of a lock-gate in a canal), into either the left or right compartment, at its inner angle; namely, that nearest to the mouth of the sewer; in such a manner, that, while the action of the lever opens the one gate, the other will be closed. Through one of these gates at a time, the sewage will be running into the right or left division of the receptacle; in which the heavier and grosser parts will sink to the bottom, and gradually fill the compartment as high as the level of the lower part, or base, of the great sewer. This gate will then be closed, and the one leading into the other division of the receptacle opened, for the same operation; and so on alternately.

"The grand receptacles should be emptied by means of engines, which should pump the material into a large cylinder, running parallel with the top. When the pump is working, a large wheel should be kept constantly revolving, in order to give motion to the manure, so as to prevent the choking of the works. From the cylinder, a sufficient number of hose, with cocks, should convey the material, at once, to as many covered barges as might be required for transporting it by canals into the country, or some convenient depôts along the banks: boxes, or close carts, like watering carts, could be used, when requisite, for land conveyance.

"To provide for the waste waters, in time of floods, or exceedingly high tides, I would add to each grand receptacle above described a third one, by the side of it, about one hundred yards square, and of the depth of low water, into which the thin and watery parts should flow, when the tide rises so high as to close the valve-slucies of the receptacles. The sewage, being thus backed, would rise about two feet, and would then flow through the side valve-slucies into the waste receptacle, which would relieve itself, by means of other sluices, into the river at the ebb of the tide at a place below the London district. If the waste receptacle should fill faster than desirable, the engine used for filling the barges could be employed in relieving it, until the turn of the tide, when it could be applied to its original purpose.

"As an essential part of this system, it will be necessary to protect all the principal metropolitan drains, which are to pour their contents into the grand sewer, from the admission of anything, besides fluids, from the streets, and likewise to prevent the smell from rising out of them. For these purposes a grating and trap, on the following construction, should be placed at the head of each drain, whatever may be its size, which will obviate the possibility of its being choked with dead dogs, cats, rags, straw, and grit from the streets; at present forming an evil of such extent, that it is found necessary to employ men purposely to walk the drains in order to remove those obstructions. This trap is simply a square cast-iron box, open at the top, on which the grating, as it exists at present, should be placed. There should also be an opening, two thirds down on one side, against which a slate flap should be suspended from the edge of the square grating at the top; and the bottom of this flap should rest on the outer edge of the opening below. By these means

the smell from below would be shut out; the water from above would run freely into the drain; and the heavy substances, grit, &c., would fall into the bottom of the box, so as to be removed at intervals by the street cleansers. It will at once be perceived that a trap on this construction would act both in wet and dry weather; whereas the one that is now occasionally used acts only during the prevalence of wet; and, when the weather is dry, the effluvia from the drains are horrible.

“*Ventilation. Mode of ventilating the Sewers. (Proposed by J. Martin, Esq.)*—For the ventilation of the great sewers, a fire should be placed at the higher end, supplied with no air but that which would proceed from the great drains; thus, not only would the bad air be drawn from them, but, by passing through the fire, it would become so purified as not to injure the external atmosphere. If a necessity arise for any repair, &c., in any of the lesser drains, a fire should be placed at the higher end, and the trap beyond the place where the repair is going on should be opened; thus placing the men in the current of fresh air going from the trap to the fire, and preventing the escape of the foul air into the street.

“*Mode of ventilating the Receptacles and Sewers generally, and of destroying all noxious Effluvia from them. (Proposed by N. Ogle, Esq.)*—Anxiety will naturally be felt respecting the method by which the exhalations from so large a collection of animal and other impurities, amounting, at a moderate computation, to several millions of pounds, are to be rendered imperceptible to the senses, and innoxious to health. With a view of removing all such feelings, I submit the following explanation of this very essential part of Mr. Martin’s plan:—

“Over the great receptacles fires will be placed, so arranged that no air shall reach them but that which has been drawn through all the ramifications of the sewers which intersect the ground beneath the streets. Thus a constant in-draft of atmospheric air will be drawn down into the great sewers, which will prevent the effluvia, now too commonly perceptible during particular states of the weather, from rising into the houses or roads. As the heat from these fires will be used to generate steam to work, by engines, the pumps which are to be employed for the double purpose of removing the manure from the receptacles, and of producing a vacuum in the hollow columns and architraves, by which atmospheric pressure may be used as a constant power at every warehouse, wharf, and manufactory; the establishment of such fires will afford three direct advantages. But, besides these, another important result will be obtained from them; for, by blowing the waste steam, which has passed the engines, into the lofty chimney placed over the receptacles, another vacuum will be created, which will draw up through the fires, with vast rapidity, the air commingled with the sulphuretted, the carburetted hydrogen, the carbonic acid gases, and whatever else may be evolved from the fermenting mass. In order to keep those gases always in motion, the atmospheric air extracted from the hollow columns and architraves, as before stated, will be ejected with force into the great receptacles, thence to be drawn through the fires by the action of the above chimney. By this process all effluvia will be destroyed.

“App. D. No. II. *Short Memoranda on the Nature, Value, and Application of Human Manure, deduced from Facts, and Agricultural Experiments. (Drawn up, at the Desire of the Committee, by A. B. Granville, M.D., F.R.S., One of the Members.)*

“App. D. No. III. *Presumptive Proofs of Income.*

“App. D. No. IV. *The Institute of British Architects’ Letter to John Martin, Esq., dated 43. King Street, Covent Garden, 3d March, 1836.*—‘My dear Sir,—As you were yourself present at the last ordinary meeting of the Institute, held on Monday, the 29th of February, you are fully aware of the intense interest with which the members received the description of your admirable project for improving the discharge of the sewage of this metropolis, and relieving the Thames from those impurities which now so materially injure its

waters, and affect the health of the inhabitants. I am, however, directed by a special resolution, passed on that occasion, to present to you the thanks of the Institute for having submitted this important subject to their notice. Perhaps this acknowledgment may not be considered by you the less valuable, as proceeding from a body of professional men, whose practical experience enables them, even from so brief a view of the subject, to appreciate, in a general way, the important results which might arise from the adoption of a plan of such a nature. I am, my dear Sir, with every expression of sincere regard, yours very faithfully and truly, — *Thomas L. Donaldson, Honorary Secretary and Corresponding Member of the Institute of France.*"

That we have thought on the different subjects treated of in this *Report*, will appear evident from two articles; the one, *A Plan for saving the Manure lost in the common Sewers of London, and rendering the Thames Water fit for domestic Purposes*; and the other, *On Breathing Places for the Metropolis, and other Towns*, which appeared in the *Gard. Mag.*, vol. v., for 1829. It will be seen, even from the titles of these articles, that we approve of the general principle of preventing the London sewers from emptying themselves into the Thames; and of saving every particle of the manure which they contain. We differ, however, from Mr. Martin, in preferring several intercepting sewers to one, which one, from its unavoidable magnitude, we think would be liable to very great risks in times of heavy rain, or severe frost, notwithstanding the precaution of flood-gates; which, even if found efficacious, would, in a great measure, defeat the purpose of the sewer, by contaminating the water of the Thames.

Another difficulty regarding Mr. Martin's plan, is the quantity of sewer water that will require to be either evaporated, or run off, from the manure reservoirs. This quantity would necessarily be immense, and may be estimated by the quantity brought into London by the different water companies, or obtained from wells, &c., in addition to what falls from the clouds. If this water is neither evaporated nor run off, then the contents of the sewers must be conveyed in their present state to the grounds where they are to be employed as manure; but to convey all the water contained in the sewers of London in "covered barges, or properly constructed land-carriages," may be safely pronounced impracticable. We have no doubt of the utter impossibility of evaporating this water during the winter months, and, consequently during that season at least it must be run off. Mr. Martin has not stated how he means to dispose of it. It is certain that, if it found its way into the Thames any where above Gravesend, it would, from the influence of the tides, contaminate the water as far as London; and, if it remained in ponds in the neighbourhood of the reservoirs of manure, it would cover great part of the surface of the Essex marshes. The superfluous water, we think, would be best got rid of by running it off from the manure reservoirs into an open sewer, parallel to the Thames,

and continued as far as the sea, and then allowing it to escape among the sea-water, which is already unfit for human use. The salt seas, then, in every part of the world, appear to be the only natural cess-pools, or reservoirs, for the sewers of great cities; and, unquestionably, the only true principle of arranging the sewerage of all cities, towns, and even villages, which are built along the banks of rivers, is by forming sewers parallel to those rivers, and not so far from them as to occasion any difficulty in the sewers receiving the drainage of the space between them and the margin of the river.

If the building of London were to be recommenced, the first step should be to form two sewers parallel to the Thames, though at such a distance from it as to admit of forming docks, basins, &c., on its banks; but, as this has not been done, the question is (now that the ground is covered with houses and streets, and various docks, basins, and canals), how to remedy the evil? We are inclined to think it will be better done by two or three intercepting sewers, at different distances from the Thames, than by one so close to that river, and so large as that which Mr. Martin proposes. One sewer might be carried at about the distance of the Strand, more or less, as might be convenient; a second, about the distance of Holborn, which should intercept all the sewers between it and a third, about the distance of the New Road, which should, in like manner, intercept all the sewers northwards. The directions of these sewers must necessarily vary with the inclination of the surface, so as to keep the bottom of each sewer of one uniform declivity; and they might all unite in an open sewer, or ditch, a few miles down the river, which ditch might be continued to the sea, or to the point where the water of the Thames became decidedly salt. Where the sewer met with rivers or canals, it might cross beneath them in inverted siphons, such as those employed in conveying the water used in irrigation in Lombardy. Indeed, a considerable part of the water of this sewer, and, possibly, at some seasons of the year, the whole of it, might be employed in irrigation; in which case it should be raised from the sewer by machinery, impelled by steam, and conveyed to the fields intended to be irrigated by open ditches, or in pipes. By the latter mode, it might be conveyed many miles in the interior, even over a hilly country; and, perhaps, such a mode of irrigation would even now pay the British cultivator.

If intercepting sewers of the kind described were to be carried into effect in London, they might all be so deep under ground as to be excavated by tunneling; and, consequently, the surface, and the buildings on it, would be scarcely at all disturbed. The expense, also, of this mode of excavating sewers, we think, might be more readily ascertained than that of forming one immense

tunnel in Mr. Martin's manner ; as it could not vary much from that of the present ordinary sewers. One obvious advantage of this mode of forming intercepting sewers is, that, by dividing the water to be conveyed away into different portions, there never could be any danger from the stoppage of a sewer, at all to be compared to that which would result from the bursting of one main sewer, which should contain the contents of all the sewers of the metropolis on one side of the river. Another advantage is, that, by having the intercepting sewers considerably deeper than the ordinary ones, there would be no occasion to stop up the ends of the ordinary sewers which crossed them ; in consequence of which, if any intercepting sewer were at any time choked up, the superfluous water would readily find its way, through the ordinary sewer, into the next intercepting sewer, or, at all events, into that which was on a lower level. Again, a system of intercepting sewers would not interfere with any of the docks, or with the canals which join the river, which the scheme of a single sewer adjoining the Thames, we think, would certainly do.

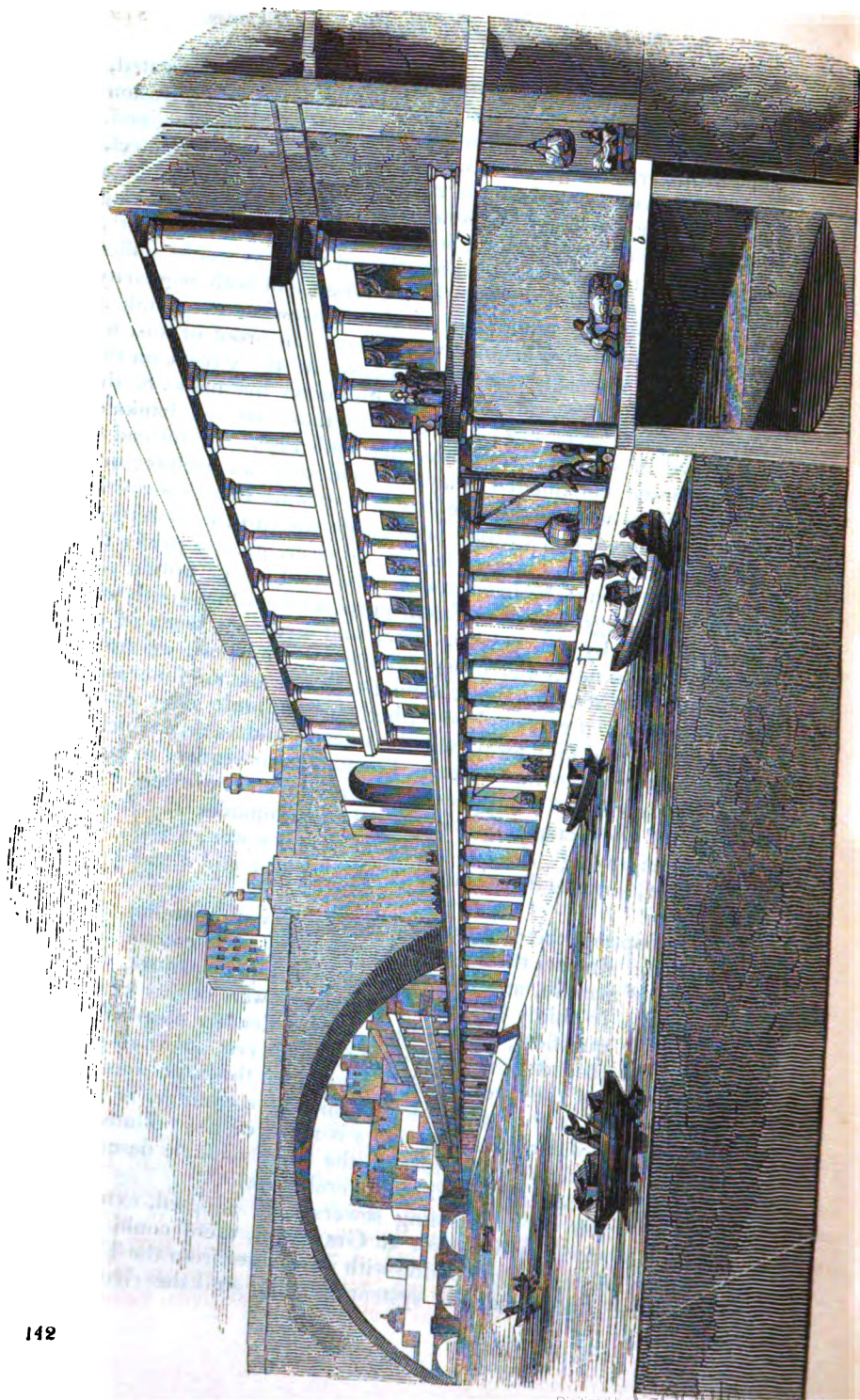
If such a system of sewerage were formed on the intercepting principle, or, indeed, on any other, to be effective in preserving the purity of the water of the Thames, it must be commenced above Brentford, or rather, perhaps, at Oxford, and continued, at least, for some miles below Gravesend. Wherever the sewer did not pass through towns or villages, it might be an open ditch ; and it would form, during its whole length, a valuable source of liquid manure to the adjoining lands. Of course, it could easily be carried under rivers, streams, or canals connected with the Thames, by the mode already suggested ; and such proprietors as chose might have a covered ditch instead of an open one. Other proprietors might have iron pipes, even though they lived at several miles' distance, communicating with the sewer ; and, by applying pumps to these pipes, they might obtain water for the purposes of irrigation at pleasure.

We shall, perhaps, surprise our readers when we state, as our candid opinion, that we do not think the " magnificent promenade on each side of the river, to be formed by the conversion of the roofs of the colonnaded wharfs into parapeted walks," would be at all desirable. A quay, or broad terrace walk, along the banks of the river, we think, would be highly so ; but to stop up the ends of the streets by this colonnade, and its parapeted roof, would, we think, prevent their proper ventilation ; and we are sure that it would totally destroy the beautiful views of the river, now obtained by looking down them ; which views, in a large city, more particularly in summer, are peculiarly refreshing to the sight, from the idea of coolness conveyed by the vast expanse of water, as contrasted with the dust and heat of the

streets. Were such a colonnade and public walk executed, there can be no doubt it would produce a very grand impression at first sight; but by no means so much so as might be imagined. This, a little reflection will convince any philosophic architect, must necessarily arise, from the circumstance of its ground plan having neither regularity nor symmetry; that is, of its consisting neither of one or more straight lines, nor of one or more regularly curved lines, nor of such a combination of these as would suffice to form a symmetrical whole. In the absence of both regularity and symmetry, the monotony of the impression of grandeur would, we think, soon become wearisome. In proof of this, we may refer to the elevations of the houses in the streets on the banks of the Spree, at Berlin; to those on the banks of the Neva, at St. Petersburg; and even to those on the banks of the Arno, in some parts of Florence and Pisa. If, instead of the proposed colonnaded quay, we had only an architectural basis, such as would be formed by a river wall, like those in the cities mentioned, and a broad promenade within it, we should, in the elevations of the houses facing the river, greatly prefer the variety that would be produced by the mixture of public and private buildings, by the different purposes for which both were erected, and by the wealth, taste, and even no taste, of the erectors, to any regular design whatever. In short, we are of opinion that Mr. Martin's colonnade, grand and sublime as we allow it to be, if executed on either, or on both sides of the Thames, would take away half the interest and variety which at present attaches to that river. To enable our readers to judge for themselves, we shall present them with an engraving, a facsimile of the perspective view which accompanies the *Report*. In this engraving (*fig. 142.*), *a* is the grand sewer; *b*, the roof to the sewer, forming the wharf; *c*, the old quay; and *d*, the public walk.

By adopting the principle of having sewers parallel to all rivers and streams throughout the whole of their course, every particle of manure, and more especially of liquid manure, would be saved. In thinly inhabited countries, sewers of this kind are out of the question; but in such as are densely peopled they seem to be absolutely necessary for the preservation of the purity of the water of the rivers. There must, we think, be something radically bad in the geographical police of a country, in which not only the water of all the rivers is more or less polluted, but in which an immense quantity of the most valuable description of manure is habitually and irrecoverably lost.

If a system of intercepting sewers were adopted, extending from Brentford or Windsor to Gravesend, there could be no difficulty in supplying London with pure water from the Thames. If, on the other hand, the system of making all the rivers of a



country serve as its main sewers, as is at present the case, not only in Britain, but throughout the world, is to be persevered in, it may be reasonably pronounced impossible ever to obtain perfectly pure water in large quantities in densely peopled countries; since every part of the rivers of such countries must contain more or less of those fæcal impurities, which, according to Dr. Granville (see p. 365.), neither subsidence nor fermentation will remove.

With this view of the subject, we do not approve of Mr. Martiu's plan of forming a dam across the Thames, and supplying the metropolis from the water above it; for though we admit that this water is much more pure than that of the Thames opposite London, yet still it would contain all the impurities of Brentford, and the tributary sewers from the intervening villages. Mr. Telford's plan is not without objections of the same kind: in short, there is no plan by which immense quantities of perfectly pure water can be obtained in a densely peopled country like England, but by preserving the purity of the rivers by intercepting sewers, or by raising the water from inferior strata, in which there may prove to be an abundant supply. When we consider the advantage that would arise from saving and applying to the surface of the soil the immense quantity of liquid manure now utterly lost, and, at the same time, the desirableness of having pure water in all large cities, we cannot help thinking that the subject of intercepting sewers deserves the attention of government, and of the proprietors of lands in the country, no less than of the dwellers in towns.

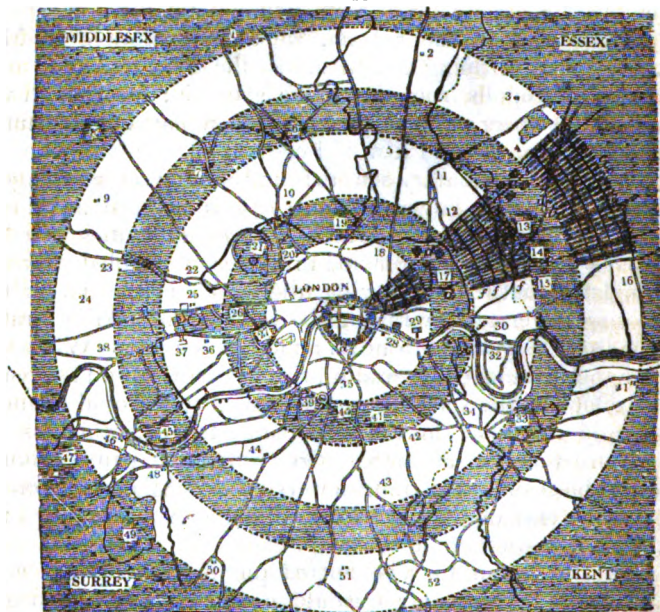
Mr. Martin's plan for a parapeted public walk by the side of the river is magnificent; but, as we have already stated our objections to the proposed structure, it is unnecessary here to add anything more respecting it. An uncovered parapeted quay, like that which borders both sides of the Neva, at St. Petersburg, we should wish to see carried along both banks of the river; and this, besides facilitating business in business hours, would form an excellent promenade in the evenings, and on Sundays.

In the year 1829, in consequence of an attempt made in parliament to procure a bill for enclosing Hampstead Heath, our attention was directed to the subject of public walks and breathing places; and the following is an extract from an article which appeared in the *Gardener's Magazine* for that year:—

“A late attempt in parliament to enclose Hampstead Heath has called our attention to the rapid extension of buildings on every side of London, and to the duty, as we think, of government to devise some plan by which the metropolis may be enlarged so as to cover any space whatever with perfect safety to the inhabitants, in respect to the supply of provisions, water, and

fresh air, and to the removal of filth of every description, the maintenance of general cleanliness, and the despatch of business. Our plan is very simple; that of surrounding London, as it already exists, with a zone of open country, at the distance of say one mile, or one mile and a half, from what may be considered the centre, say from St. Paul's. (*fig. 143.*) This zone of country

143



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| 1. Fluchley Common; in the zone of country. | 17. Bethnal Green; country. | 35. Walworth; town. |
| 2. Tottenham; in the zone of town. | 18. Hoxton; town. | 36. Brompton; town. |
| 3. Walthamstow; town. | 19. Islington; country. | 37. Kensington; town. |
| 4. Forrest House; town. | 20. Somers' Town; country. | 38. Hammersmith; town. |
| 5. Stoke Newington; town. | 21. Regent's Park; country. | 39. Lambeth; country. |
| 6. Highgate; country. | 22. Paddington; town. | 40. Kennington; country. |
| 7. Hampstead; country. | 23. Paddington canal; town. | 41. Camberwell; country. |
| 8. Kingsbury; country. | 24. Six Elms; town. | 42. Peckham; town. |
| 9. Willesden; town. | 25. Bayswater; town. | 43. Dulwich; town. |
| 10. Kentish Town; town. | 26. Hyde Park; country. | 44. Clapham; town. |
| 11. Clapton; town. | 27. Green Park; country. | 45. Fulham; country. |
| 12. Hornamerton; town. | 28. Southwark; town. | 46. Putney; town. |
| 13. Stratford; country. | 29. London Docks; town. | 47. Rochampton; country. |
| 14. West Ham; country. | 30. West India Docks; town. | 48. Wandsworth; town. |
| 15. West Ham Abbey; country. | 31. Woolwich; town. | 49. Wimbledon Park; country. |
| 16. East Ham; town. | 32. Isle of Dogs; town. | 50. Tooting; town. |
| | 33. Greenwich Park; country. | 51. Norwood; town. |
| | 34. Deptford; town. | 52. Sydenham; town. |

may be half a mile broad, and may contain, as the figure shows, part of Hyde Park, the Regent's Park, Islington, Bethnal Green, the Commercial Docks, Camberwell, Lambeth, and Pimlico; and it may be succeeded by a zone of town one mile broad, containing Kensington, Bayswater, Paddington, Kentish Town, Clapton, Lime House, Deptford, Clapham, and Chelsea: and thus the metropolis might be extended in alternate mile zones of buildings, with half mile zones of country or gar-

dens, till one of the zones touched the sea. To render the plan complete, it would be necessary to have a circle of turf and gravel in the centre of the city, around St. Paul's, half a mile in diameter. In this circle ought to be situated all the government offices, and central depôts connected with the administration of the affairs of the metropolis. That being accomplished, whatever might eventually become the extent of London, or of any large town laid out on the same plan and in the same proportions, there could never be an inhabitant who would be farther than half a mile from an open airy situation, in which he was free to walk or ride, and in which he could find every mode of amusement, recreation, entertainment, and instruction.

“Supposing such a plan considered desirable, it could not, perhaps, be carried into execution in less time than 50 or 100 years, on account of the large sums that would be required for purchasing the valuable houses that must be pulled down to form the central circle of turf, and the first zone of country. But, were government to determine the boundaries of certain future zones, and to enact a law that no buildings now standing on the future zones of country should be repaired after a certain year; and that, when such houses were no longer habitable, the owners should be indemnified for them by the transfer of other houses of equal yearly value in another part of the metropolis, belonging to government; the transition (considering the alteration in the relative value of property which is likely soon to take place, in consequence of the numerous rail-roads, &c., now going forward,) would not be felt as the slightest injustice or inconvenience. Government would be justified in adopting a plan of this sort, from its obvious reference to the public welfare; and a committee appointed to carry the law into execution should begin by purchasing such lands as were to be sold in the outskirts of the metropolis, in order to be able, at a future period, to exchange them for lands destined to form the central circle of the first zone. “In endeavouring to give an idea of the situations of the zones round London (*fig.* 143.), we have drawn the boundary lines as perfect circles; but, in the execution of the project, this is by no means necessary, nor even desirable. The surface of the ground, the direction of streets already existing, which it would not be worth while to alter, the accidental situations of public buildings, squares, and private gardens, with other circumstances, would indicate an irregular line, which line would at the same time be much more beautiful as well as economical.”

In judging of the remarks in this and the preceding page, it must be recollected that they were written in 1829.

MISCELLANEOUS INTELLIGENCE.

ART. I. Foreign Notices.

FRANCE.

THE following is a translation of a letter from M. Le Bas, Architect at Paris, Honorary and Corresponding Member of the Institute of British Architects, addressed to the secretaries of that body, and read at their closing meeting held on Monday, 18th July, 1836 :—

Paris, 14th July, 1836.— I have received your letter, and in reply I hasten to give you as succinct an account as possible, not only of the details of the late fire at Chartres Cathedral, but also of the new public buildings which are now in course of completion in our capital.

The Accident at Chartres appears to be much less serious, in as far as regards art, than was at first imagined. It was occasioned by the negligence of a workman engaged in repairing the timber-work of the roof; and who left there a brasier full of lighted charcoal, some sparks from which were carried by the wind among the carpentry. The workman, on his return, finding that the wood had taken fire, thought he could extinguish it himself, and neglected to call for help till it was too late to stop the progress of the flames, which spread with extreme rapidity, till the whole of the timber-work of the grand nave was reduced to ashes. The lead that covered the roof melted, and ran down on all sides; and the half-burnt beams sank on the vaulted stone roof, where they continued to burn till they were quite consumed, without any other injury resulting to that part of the building than what arose from the calcination of 2 in. or 3 in. of the upper surface of the stone. The clock, which was in a tower, was melted; all the wood-work that supported it was burnt; and the interior of the tower considerably damaged. Happily, the magnificent works of art contained in the cathedral, both in sculpture and painted glass, have not only escaped serious injury, but were wholly untouched. The damage done to the cathedral is thus confined to the destruction of the carpentry of the roof, and the melting of the lead; the expense of repairing which is valued at about 800,000 francs (3200*l.*). The repairs have already commenced; and when they are finished it is probable that the edifice will be found to have gained, rather than lost, by the accident; since for a heavy wooden roof, badly put together, one of iron will be substituted; which will not only be superior in point of art, but will be a guarantee against the recurrence of a similar misfortune.

The Public Buildings of Paris.— I am not surprised to find so much interest felt in England respecting the erection and reparation of our public buildings; as the natural consequence of the increased intimacy between the two nations is, to make us reciprocally appreciate the merits of each other. Thus, while we admire the enterprises for the advancement of commerce and public utility, which are so frequently undertaken in England, you envy the splendour of our edifices, which all the arts are called in requisition to embellish. If you are more practical, we are more brilliant; and this may be traced to the difference of situation, and of character, in the people of two nations, to both of whom the noble mission has been delegated of enlightening the world.

The principal public buildings, the finishing of which is carrying on with the greatest rapidity by government, are: 1. The triumphal arch at the Barrière de l'Etoile; 2. The Church de la Madeleine; 3. The Pantheon; 4. The Museum of Natural History; 5. The Basilico of St. Denis; 6. The School of the Fine Arts; 7. The hotel for the Ministers of the Interior, &c., on the Quay d'Orsay; 8. The monument commemorative of the events of July, 1830; 9. The College of France; and, 10. The fixing of the Obelisk of Luxor; without mentioning numerous works of less importance.

The works to be completed out of the civil list are: The Museum at Ver-

sailles, and the restoration of the paintings, and of the furniture and fittings up, of the apartments in the Château of Fontainebleau.

The works in progress which have been undertaken at the expense of the city of Paris, are: 1. The church of Our Lady of Loretto; 2. The prison for the reformation of young culprits; 3. The prison for adult criminals; 4. The embellishments of the Place de la Concorde; 5. The reparation and enlargement of the Hôtel de Ville, and the Palais de Justice; besides many other works, more or less important, but which have all for their object public convenience, and the embellishment of the city.

The Triumphal Arch at the Barrière de l'Etoile. — Of all these great works the triumphal arch is the only one which is nearly completed; and even this wants the piece of sculpture which ought to crown its summit, but of which the design is not yet determined on. This arch will be opened to the public on the 29th of this month, on the occasion of the fête of the Three Days of July. It is ornamented with numerous works of sculpture and statuary, of a scale proportioned to that of the arch; that is to say, of colossal dimensions. A bas-relief, 130 mètres in length (above 400 ft.), occupies the frieze of the entablature; and six large bas-reliefs, and four smaller ones, decorate the interior and exterior surfaces. In the spandrels of the large and small arches are twelve figures in bas-relief, which fill the angles that are formed; and four colossal trophies, in alto relievo (the allegorical and historical figures contained in which are near 20 ft. high), are placed against the piers which support the arch. A sum of 120,000*l.* has been employed in the completion of this edifice.

The Exterior of the Church de la Madeleine is entirely finished. It is of the greatest magnificence, not only as regards its architecture, but from the rich ornaments and bas-reliefs with which it is decorated. The interior of this temple, which is one of the grandest known, corresponds, in the splendour of its arrangements and its decorations, with the richness of the exterior. To give a complete description of this, and the other buildings of which I shall have occasion to speak, would be much too long; I shall therefore confine myself to telling you, that all the parts are alike brilliant with paintings, sculpture, gilding, and the most beautiful marbles; all distributed without profusion, but also without any appearance of parsimony. The sum expended on this edifice, during the last three years, amounts to 132,000*l.*

The Pantheon. — 60,000*l.* have been devoted to the embellishment of the Pantheon. Already this noble edifice has been surrounded with a palisade, on the pedestals of which are superb candelabras of bronze. Three large gates, enriched with ornaments and bas-reliefs, have been executed in bronze; as has, also, a colossal statue of Immortality, which is to be placed on the summit of the dome. Bas-reliefs have been affixed to the tympanum of the pediment, and under the peristyle of the temple, to decorate the exterior; and, interiorly, our celebrated painter, Gérard, has just finished paintings for decorating the four spandrels of the cupola. Fresh sums will be allowed for completing the other works. The tombs of Voltaire, Rousseau, and the Duke de Montebello have been suitably restored; and the different parts of this edifice will furnish a vast field for the future labours of the historical painter and sculptor.

Jardin des Plantes. — Immense works have been, and are still being, executed at the Museum of Natural History. When they are completed, they will have cost 114,000*l.* They consist, principally, in the erection of a range of new hot-houses, in the construction of a gallery for mineralogy and geology, in a building for the monkeys, and in a reservoir and pipes for the distribution through the garden of the waters of the Canal de l'Ourcq; also of some new buildings which are required by the professors.

Basilico of St. Denis. — A sum of 60,000*l.* (which is not sufficient) has been employed in the restorations and embellishments of the church of St. Denis; which is now rising from its ruins, and is every day becoming

more and more enriched with beautiful works in precious marbles, in mosaic, and in painted glass; besides which there is a magnificent organ.

The School of the Fine Arts has been very richly endowed: 80,000*l.* have been expended on it during the last three years. The works proceed with great activity and great splendour. The construction of the principal building, and of the right wing, is finished; the rich portico, in the form of a triumphal arch, obtained from the demolition of the Château de Gaitton, is restored; vast halls have been laid out on the different stories, for the pupils, the exhibitions or examinations, the libraries, and the museums. The ancient church has been restored; and it is destined to receive copies of the paintings in the Sistine Chapel at Rome, and casts of the tombs of the Medici at Florence, which the French government has had made.

Hôtel du Quai d'Orsay. — But what shall I say to you of the Hôtel du Quai d'Orsay, destined for the use of the Ministers of the Interior, and of the Public Works; on which, only from 1834 to 1837, there will have been expended 200,000*l.*? You may judge, by the importance of this sum, of that of the works. They are such, that I know not if they may not be reproached with having too great a prodigality of ornament.

The Monument commemorative of the Events of July, on the site of the Bastille, is not so far advanced as any of the others. It consists of a column of bronze placed on a surbase of marble, which serves as a fountain; and it is surmounted by a statue in bronze of the Genius of Liberty. The estimated cost of the erection of this monument is 36,000*l.*

College of France. — The restorations and additions of lecture-rooms, libraries, galleries of natural philosophy and of mineralogy, to the College of France, have cost 52,000*l.*; and this establishment, founded by François I., will now be worthy of its high destination.

The Obelisk brought from Luxor to Paris is to be erected, in the course of the next year, on the Place de la Concorde. The pedestal will be composed of five pieces of stone, of colossal dimensions; the extraction of which from the quarries at Brest was almost as great a labour as that performed by the Egyptians in removing the obelisk from the mass of sand in which it was buried. The means employed to transport the single stone for the base of the pedestal were equally simple and ingenious; and it is probable that those employed for the elevation of the obelisk will merit the same eulogium. The cost of preparing and erecting the pedestal of granite, and that of the steam-engine which is to raise the obelisk, are estimated at 22,400*l.*

Chamber of Peers. — Important additions are also making to the Chamber of Peers; and all the façade looking on the garden of the Luxembourg is about to be augmented by an addition, which will contain the hall for public meetings and its dependencies (*la salle des séances publiques, et ses dépendans*).

Versailles. — Of all the works undertaken by the Civil List, the most considerable are those at the palace of Versailles. The King has conceived the noble project of rendering this ancient royal residence useful, and of consecrating it to the fine arts, by forming it into a national museum. All the historical recollections which have been recorded by painting and sculpture, from the most distant period to the present day, are here collected together, and arranged chronologically, so as to present a series of memorable events and celebrated personages, illustrative of the history of France. To realise this project, it has been necessary not only to throw all the small apartments into galleries, and to search with infinite pains, and at a very great expense, for all the historical pictures, statues, and bas-reliefs now existing, but to order from French artists those which will be wanting to complete this interesting collection. The works, both of construction and art, of this great undertaking, are already far advanced; and it is estimated that they will cost 7,000,000 or 8,000,000 francs before they are entirely finished.

Fontainebleau. — It is with the same solicitude that the King, as protector of the arts, has saved from utter ruin the fine paintings in fresco at the Château

of Fontainebleau. All the works of art, executed in this palace in the fifteenth and sixteenth centuries, by the artists whom François I. and Henri II. invited to France from Italy, being in a deplorable state of degradation, able painters have been called in to restore them; and they have succeeded in doing so in the most satisfactory manner, by means of encaustic painting. The interior of this palace, now restored to its ancient splendour, displays the most imposing appearance, and confirms the tradition of the taste for the arts which existed in France at the epoch of its erection. Several millions of francs have been devoted to its restoration, and to the rebuilding or repairing of those parts which exhibited most symptoms of decay.

The administration of the city of Paris is not behind in this general movement. It has completed, or undertaken, immense labours; the details of which would far exceed the limits of this letter.

The Church of Notre Dame de Lorette is nearly finished; and the objects of art which are enclosed in it are almost innumerable. Twenty historical painters have been occupied, for several years, in retouching the paintings which it is decorated, the subjects of which are all drawn from the Bible, or the lives of the saints, to the number of nearly one hundred. The sculptor and statuary have also contributed to its decoration, both exteriorly and interiorly; and as a piece of architectural design it is extremely rich. The expense is 80,000*l*.

The Prisons for young culprits, and for old criminals, are distinguished by another character in art, consisting in the disposition of the cells, and in the plans for amelioration, both having the same object in view; viz. the physical and moral advantage of the prisoners. These two establishments have cost 200,000*l*.

The Embellishments of the Place de la Concorde, where two beautiful fountains are to accompany the obelisk of Luxor, like those in the Place of St. Peter at Rome, are not yet much advanced; but they are about to be prosecuted with activity, as are the projects for the restoration and enlargement of the Hôtel de Ville and the Palais de Justice; where our historical painters and sculptors will find numerous and fine occasions for exercising their talents. These divers works are estimated to cost 700,000*l*.

However incomplete you may find this account of the actual state of the works relative to our principal public edifices, it will suffice, I trust, to give you some idea of their importance; and, if I have omitted any mention of many works, and have not entered into more ample details, it is because I feared that my letter was already too long, and, above all, that it would not arrive in time to be communicated to your Institute. — *H. Le Bas*.

ART. II. Retrospective Criticism.

ERRATA. — The following are a few typographical errors in Mr. Bland's essays on the *Principles of Construction in Arches, &c.*, which the reader is requested to correct with the pen: —

In p. 55. line 4., for "1, 2, 3", read "1', 2', 3'"; making the same alterations in the corresponding figures of the diagram (*fig. 8.*).

In p. 56. line 6., after the full stop, insert "Nos. 7, 8, 9, and 10. stood alone".

In the diagram p. 57., add to the end of the top line of extrados " $1\frac{1}{2}$ ", and to the end of the second line, " $1\frac{1}{2}$ "; also shift the figures " $\frac{1}{2}$ and $\frac{1}{2}$ ", on the scale, a division more to the right.

In the diagram p. 59., omit "o" on the centre perpendicular line, and "k" under the base line.

In p. 60. make the following corrections: — Line 7., for "extrados", read "extrados"; line 11., for "*fig. 11.*", read "*fig. 12.*"; lines 12. and 14., for

"(d b h)", read "(d b f)"; line 12., for "d b and h", read "d b and f"; line 12. from the bottom, for "forces" read "focus".

In p. 206., last line, for "3½", read "4½".

In the diagram p. 211., insert "gf" on the base line.

In p. 212. line 26., for "dimensions", read "diminutions".

In p. 217. line 3., for "(figs. 86. and 87.)", read "(figs. 85. and 86.)".—*W. B.*

ART. III. *Queries and Answers.*

BOOKS on Gothic Architecture.—What are the best for a student to collect, so as to form a complete series, comprehending all the different manners, and taking into consideration that rigid economy must be attended to by the purchaser?—*A. B. Plymouth, June 2. 1836.*

Writers on Perspective "do not appear to me to have laid sufficient stress upon the difference between the points of sight and distance being fixed, in contradistinction to their being settled at the will of the Artist." This remark occurs Vol. III. p. 191.; and I should gladly see it taken notice of by some of your able correspondents; I should also be very glad to see several other difficulties, not provided for in most of the works on perspective, made the subject of some papers for your Magazine; and, as there is great room for improvement in this delightful science, I think that these papers would be very acceptable to the generality of your readers. *Nicholson's Perspective* is the one I have used; but I should be glad to know what work, among the many, may be considered the best?—*A. B. Plymouth, June 2. 1836.*

ART. IV. *Institute of British Architects.*

JUNE 20.—*J. B. Papworth, V. P.*, in the Chair. The minutes of the last Meeting were read. Messrs. Hamilton and Mocatta, Fellows, and *W. Smith*, Associate, having attended for the first time since their election, were admitted members of the Institute by the President. The following nomination and recommendation for a new member having been approved by the Council, and signed by the Chairman, was read:—as Fellow, *Robert Dennis Chantrell*, Architect, of Leeds.

The following architects, pursuant to a recommendation of the Council to that effect, were elected Honorary and Corresponding Members:—*Ithiel Town* of New York, United States, America; *Sebastiano Ittar* of Catania, Sicily.

The following donations were announced as having been received since the last Meeting:—*John Martin, Esq.*, impressions from engravings of *Belshazzar's Feast*, *Fall of Babylon*, *Joshua commanding the sun to stand still*, the *Deluge*, *Fall of Nineveh*, the *Crucifixion*, and descriptive catalogue. *Monsieur Hittoff*, Honorary and Corresponding Member, *Annales de la Société libre des Beaux Arts*, 8vo; and various pamphlets. *Thomas Hamilton* of Edinburgh, Fellow, *Traité des Pierres Précieuses*, par *Brard*, 2 vols. 8vo; *Cours d'Architecture*, par *Daviler*, 4to, 1696; *Vitruvius Venetia*, 1584; *Vetera Monumenta*, &c., fol., Rome, 1690; and various specimens of slates and stones. An exquisite model of *Cossey Hall*, the seat of *Lord Stafford*, executed by *Thomas Dighton, Esq.*, was also on the table, sent by that gentleman, to be deposited in the collection of the Institution.

W. L. Donaldson, Honorary Solicitor to the Institute, read a paper on heraldry, and its connexion with Gothic architecture. The thanks of the meeting having been voted for this communication, and *Mr. T. L. Donaldson*, Honorary Secretary, having explained the arrangement and construction of the pavilion erected at Edinburgh, in 1834, for the "Grey Dinner," by *Thomas Hamilton*, Architect, of that city, the Meeting adjourned to the 4th of July.

In the course of the evening, the Chairman announced, incidentally, that on the 18th of July, that being the last meeting of the season, the Institute Medal would be presented by Earl de Grey (who would preside on that occasion) to Mr. Godwin, jun., for his prize essay on Concrete, read at one of the early meetings of the session.

July 4. 1836. — Charles Barry, V. P., in the Chair. Read, the minutes of the last Meeting. The balance in the Treasurer's hands appeared to be 247*l.* 19*s.*

Elected. The following gentlemen were balloted for, and declared to be duly elected as Associates: — Samuel Sharp, Architect, of York; Henry Appleyard, Architect, of Montagu Street, Russel Square.

The following letters, to the Secretary, and Institution, were read: —

" Sir,

" Dresden, April 30. 1836.

" Your notification of the establishment of the Institute has given me great pleasure; and I thank you for the rules and regulations forwarded to me, conjointly with the questions relating to architecture. I wish much that the situation of the Academy of Fine Arts at Dresden were such as to enable me to publish those questions in German, for promoting, according to your ideas, enquiry and research among all the members of the profession; or to procure their insertion in a scientific periodical of my country. In default of these modes of giving them publicity, I have made a short extract from the rules, and procured its insertion in the State Gazette of Saxony; inviting architects and others to address themselves for additional information to me. I send some copies of this Gazette with this letter; and have the honour to remain, with gratitude and esteem,

" Sir, your very obliged servant.

" Gentlemen,

" Milan, April 25. 1836.

" The consideration in which your Institute is deservedly held throughout Europe, no less than in Italy, makes me appreciate most profoundly the distinction which you have been pleased to confer on me by electing me your Corresponding Member. My gratitude is by so much the more lively, from the manner in which you were so kind as to communicate to me this election. The brotherhood which you offer me makes me feel how much I gain in being associated with you. On my part, I desire that I may correspond somewhat to the confidence which you place in me; and, although I may not be equal to the task, yet, if I can in any way be useful to you, I shall be gratified in so doing. I shall be truly fortunate if any opportunity offers itself of being serviceable to any of those who honour me with the title of colleague, should they be coming to Italy.

" Be pleased to accept, gentlemen, with this offer, the assurances of the profound respect and esteem with which I am

" Your obedient and devoted servant,

" FERDINANDO ALBERTOLLI."

Donations. A letter to the Right Honourable Spring Rice, M.P., containing a Plan for the better Management of the British Museum, by Mr. John Millard; a portion of stone from the Hospital which formerly stood on the site now occupied by St. James's Palace, by Mr. George Godwin, jun., Associate; a Catalogue of the Corsi Marbles, deposited in the Radcliffe Library, Oxford, 8vo; Dr. Kidd's Catalogue of Works on Medicine and Natural History, in the Radcliffe Library, 8vo, by Mr. George Gutch, Fellow; an impression of a medal of Salisbury Cathedral, published at Salisbury, by W. L. Donaldson, Honorary Solicitor to the Institute.

Resolved, That the thanks of the Institute are due to the gentlemen above named for their several donations.

G. L. Taylor, Fellow, read a paper upon the underpinning in concrete, adopted by him in the store-houses at Chatham dockyard.

Resolved, That the thanks of the Meeting be presented to Mr. Taylor for the interesting statement given by him.

Mr. T. L. Donaldson, Honorary Secretary, then read a paper communicated by Dr. G. Reid of Edinburgh to the Society of Arts in that city, upon the Principles of Sound applied to Buildings, more particularly with reference to his Class-room. Mr. Donaldson also gave a description of an apparatus used at Paris for painting or cleaning fronts of houses; with a drawing furnished by M. Loewe, Architect, of Warsaw, then present.

The Chairman thanked M. Loewe, in the name of the Meeting, for the information communicated through the Secretary. Adjourned to Monday, July 18.

Monday, July 18. — Earl de Grey in the Chair. The minutes of the last Meeting were read. Henry Appleyard, Associate, attending for the first time since his election, was admitted by the President. The following gentleman was balloted for, and declared to be duly elected:—Robert Dennis Chantrell of Leeds, as Fellow.

A minute from the proceedings of the Council having been read, recommending Dr. Charles Henry Christian Lang of Sheffield House, Kensington, for election as Honorary Fellow by contribution, and the sense of the Meeting being taken thereon, the President declared Dr. Lang to be duly elected; and he, being present, was admitted, accordingly, an Honorary Fellow by His Lordship the President.

The following letters were read:—

“Gentlemen,

“Berlin, June 2. 1836.

“The honour you have been pleased to confer on me by electing me an Honorary Member of your illustrious Society cannot be more duly appreciated than by me, who, owing to a longer stay in your country, have been enabled to form an adequate judgment of the activity of your learned bodies, and of the spirit of emulation excited by their influence upon the development of human knowledge.

“You will, therefore, gentlemen, oblige me by accepting my most cordial thanks for having admitted me into your ranks, and by allowing me to add the enclosed works to your collections, as a small token of the high regard which I entertain for their founders, and for those who are increasing them by their contributions.

“I am, &c.,

“BEUTH, Counsellor of State.”

“Royal Prussian General Consulate, 106. Fenchurch Street, July 18. 1836.

“Dear Sir,

“With the accompanying letter from Mr. Beuth, Privy Counsellor, and Director in the Ministry of the Interior at Berlin, I beg to transmit you the following works, which have been published under that distinguished patron of the arts; viz.:—

“1. Specimens of Designs for Manufacturers.

“2. Plans of Works actually executed.

“3. Specimens of Designs for Masons and Bricklayers.

“4. Specimens of Designs for Carpenters.

“These works are distributed gratis to all architects and builders in the Prussian monarchy; and essentially tend to promote knowledge and emulation.

“I think the Society of British Architects will be pleased to receive these publications as a small token of the high esteem in which they are held by those who have witnessed their great zeal and earnest desire to promote architectural science.

“I have the honour to be, &c.,

“B. HEBBLER.”

The following donations were announced as having been received since the last Meeting:—Herr Kop of Dresden, a copy of his work on architecture,

folio. Academy of Fine Arts at Padua, copy of a work published by the Academy, containing the edifices raised by the reigning Princess; also, a work illustrating the new theatre lately erected at Parma. Thomas Campbell, Esq., Sculptor, a plaster cast from his marble bust of W. Burn of Edinburgh, Architect, Fellow. An anonymous friend, ten volumes of blank books, containing tracings, drawings, and sketches by Clerisseau and others; being a collection made for the purpose of professional reference: also, a volume of drawings of ornaments executed in plaster, by Mr. Rose, after designs by Chambers, Wyatt, Stewart, &c. Mr. Williams, bookseller, Murphy's *Bat-alha*, folio, plates, London, 1836. Messrs. Brayley and Britton, copy of their work, entitled "*The Palatial Edifices of Westminster*," 8vo, pl., London, 1835-36. W. S. Inman, Fellow, Report of the Committee of the House of Commons on Ventilating, Warming, &c., abbreviated by the donor, 8vo, London, 1836. Philip Hardwick, Fellow, a suit of 28 specimens of marbles to one size, labelled; 17 specimens of French stones, labelled; also a great quantity of other specimens, some labelled, and some not.

Resolved, That the cordial thanks of the Institute be presented to the several donors above named for their splendid additions to the collection and library.

A letter from M. Le Bas, Honorary and Corresponding Member (see p. 382.) was read, giving an account of the extent of the injury done to the Cathedral of Chartres by the recent fire; and particulars of the principal buildings at Paris now in course of erection, with statements of their cost during the last three years. A letter was read from Ignatius Bonomi, Esq., Architect, at Durham, respecting some alterations and restorations recently made in the cathedral of that city. Communicated by I. J. Scole, Fellow.

Resolved, That the thanks of the Meeting are due to Messrs. Le Bas and Bonomi for their interesting communication.

T. L. Donaldson, Honorary Secretary, read a paper on the Polychromic System, translated by Nathan Garrick, Esq., and revised by W. Hamilton, Esq.; being a continuation of the subject begun at the ordinary meeting of February 29.

Resolved, That the thanks of the Meeting be presented to Mr. Garrick and Mr. Hamilton for their kind assistance on the occasion.

The Secretary also read a translation from the French of a paper on a Composition of Asphaltic Mastic, used for covering roofs, terraces, and foot-pavements, at Paris, accompanied by specimens furnished by T. Hardwick, Fellow.

His Lordship the President then addressed G. Godwin, jun., Associate, to the following effect:—

"It becomes my pleasing duty, as President of this Institute, and as presiding on this occasion, to present to you that mark of approbation which the Institute has thought proper to bestow upon a work of yours. In January last, an essay was read upon the Nature of Concrete, which the Institute felt to deserve such a prize as it was in their power to offer. I find by the minutes of that month, that that essay proved to be by you; that 'the sealed letter accompanying the essay being opened, George Godwin, jun., recently elected, appeared to be the successful competitor.' It was thus awarded by those competent judges (men at the head of the profession), appointed to give an opinion upon it, without their being aware by whom the paper was written which they approved. I have great pleasure in being President this evening, when this prize is to be awarded, when their approbation is now to be conveyed, and in being the organ to convey their sentiments. For myself, as an unprofessional man, it would be presumptuous to offer an opinion of my own; but, when I find those who have passed their lives in this pursuit have awarded the prize to you, I think I may say, even as a nonprofessional man, that I have perused your essay with much interest and advantage to myself, my attention having been called to the subject of concrete on several occasions of considerable importance. I have very great pleasure, therefore, in being the organ of their approbation. I only trust that it will be of advan-

tage to your country; and that what we now offer you may be the means of stimulating others to follow the same career as yourself."

Mr. Godwin returned thanks for the honour which had been conferred upon him, and expressed his gratification at being the first person to receive a medal from the Institute; and that the recollection of that moment would accompany him throughout his life, and be a stimulus to the earnest and honourable pursuit of his profession.

His Lordship proceeded:—"Mr. Godwin has expressed to you with what pride and satisfaction he has received this tribute, the first in our power to confer on any individual on a similar occasion. He has not, perhaps, yet had the opportunity to look at the tribute which is offered: it is, indeed, a most beautiful production. The artist, Mr. Benjamin Wyon, I believe is among us this evening; and, as men accustomed to look at and examine such objects, I am sure you will all feel that it is a pride to give, a pride to receive, and a pride to have executed, such a work as this. I have once before presented myself to you upon an occasion similar to the present: it was this time twelve-months, to take my leave of you upon the conclusion of the session. I took leave, then, with feelings of great respect for an Institute recently formed, and for the marks of kindness and respect which I had experienced at your hands. I expressed a hope that the Institute might flourish: I am happy to say that hope has been realised. Our greater fame has extended throughout the world: I may say, at all events, throughout the more civilised parts of it. We have received numerous presents from all countries; particularly Italy, Germany, and France; many of which now lie on the table. We have augmented our numbers at home; we have men of talent amongst our members abroad. When I see, at the last meeting of our session, that we are favoured by the presence of Baron Dupin and other distinguished foreigners, who will carry home in report our condition, I think I may add that the Institute of British Architects, founded here, is beginning to take root and fructify in other parts of the world; and, when I have the pleasure of meeting you again, I have no doubt I may state that we have increased in fame, value, and importance.

"This is the last meeting of the present session. Many of our members will disperse, some to the east, some to the west. Let me ask of you to carry abroad with you an affectionate recollection of the Institute at home. Remember, what information you pick up, however trifling in itself, may become, in the aggregate, valuable. There is hardly a man of any observation who cannot bring home some pebble which may prove a valuable acquisition. Be kind enough to recollect us when over the hills and far away; and let us have the pleasure to hear the result of what you have collected during the recess.

"On a former occasion of being in the chair, I stated that, though there might be in me a want of head, there should be no want of heart. I have taken a deep sincere interest in behalf of the Institute; and I may state that, not only now, but whenever I can in the slightest degree be of use to you, I shall be most happy. I have done, during the course of the session, my little; and I find that we have not only increased, but are establishing a permanent footing in the metropolis; and, as I then stated, we only wanted to be *known*, to be duly *appreciated*: now we are known. When we appear again, I have no doubt we shall find our numbers, fame, and points of usefulness have been more fully appreciated, simply because they have become more known. I will no longer take up your time, but adjourn the meeting to the first Monday in December. I will not promise to be present. I myself may be (as I said just now of others), perhaps, over the hills and far way; but, believe me, my heart will be with you, and that most cordially."

P. F. Robinson, Vice-President, proposed a vote of thanks to his Lordship, which was unanimously carried.

Adjourned to Monday, the 5th December.

THE ARCHITECTURAL MAGAZINE.

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ORIGINAL COMMUNICATIONS.

ART. I. *On the Principles of Design.* By T. SOPWITH, Esq., F.G.S.,
Architect, Newcastle upon Tyne. No. I. *Architecture.*

THE works of human art are distinguished from those of instinct, not less by the variety of objects which they combine, than by the various degrees of excellence with which these objects are fitted for their respective purposes. Perfect fitness for the proposed object is an attribute of works of instinct; and in them useless ornament is unknown. Works of human art are conducted under the influences of a more uncertain and erring guide. Gifted with reason, man confines not his operations to his immediate wants, but aspires to enjoyments of various kinds, foreign from his nature as an animal, but proudly indicative of the high intellectual endowments bestowed upon him. He mounts into the air, penetrates the chambers of the earth, and dives to the deep abyss of ocean. In the many and varied achievements of human art, we see constantly the operation of design; which is developed in the savage as well as the accomplished artist: the same in nature, but different in degree. Design, in its most comprehensive sense, includes whatever is undertaken by man, as a reasoning creature; but, in its more restricted sense, it is applied to works of contrivance in mechanism, and in the fine and useful arts. Its range, therefore, extends over the whole field of the arts and sciences; and the principles which apply to this science are closely interwoven with the history and study of the human mind. In the present paper it is proposed to consider some of the general principles of design with reference to architecture; which, more than any other art, seems to have lost much of its dependence on first principles, and to have become merely an art of imitation. An elaborate view of so comprehensive a subject would require much time and ability: it may, however, be interesting, to take a rapid view of some general principles of design as regards architectural works; and, having defined these principles, to consider their practical

application in forming an opinion of the merits of architectural works.

As the first and most universal objects in architectural design, may be named, Fitness and Economy; and these, in their true sense, are essential to every work of human contrivance. If not accomplished, they always are, or ought to be, attempted. In these terms many particulars are comprehended, which are essentially local, or apply only to particular cases: thus, the fitness of the plan of an edifice for public worship is compounded of many circumstances quite different from those which constitute the fitness of a place of public amusement; the fitness of a court of justice, in like manner, is different from the fitness of a fortification: but it is a general principle, or *axiom*, applying to all works of art, that they be fitted for the respective purposes for which they are designed. So obvious and so universal a principle as this needs only to be named, to be recognised as an *axiom of design*. Economy, as a principle, claims important consideration in designing architectural works. It implies a judicious adaptation of expenditure to the amount of funds; and the completion of as much work as can be properly effected for the sum devoted to the object in view.

Design, as regards art in savage life, is first manifested in the construction of buildings for shelter. As the mind of the contriver is rude and uncultivated, so is his work, which exhibits only the first rude dawnings of ingenuity. In these works we soon perceive another motive gradually springing up, and forming a great feature and object of design; viz. not only to appease animal wants, but to please the eye.

To fitness, or mere usefulness, beauty is added; and the hut of the savage becomes *ornamented*: the trunk of a tree forms the rude type of a column; the rough beam-end of *use* becomes the *triglyph* of Doric ornament; and the rapid and interesting progress from usefulness to ornament, which Vitruvius has so ably described, has, by the medium of various architectural works, become a matter of general information. The progress of Gothic architecture has, in like manner, been very pleasingly illustrated by Sir James Hall. That fitness and beauty are the earliest principles of design, is a matter of familiar history. From these we find the next step rising to a higher object than merely to please.

To *inspire devotional feeling* was the next important object of architectural design. The temple was fitted for the reception of worshippers, and its walls and pillars were enriched with ornament: but it is impossible to contemplate either heathen temples or Christian churches, without perceiving that an effect was produced which claims so high a place in architectural composition, that it may justly be considered as now forming an essential principle of design. This is expression, by means

of which the useful and ornamental temple became endued with a character resulting from greatness and beauty combined. The mere fitness or convenience as regards size and accommodation, and the mere ornament as regards rendering those details ornamental and pleasing that before were rough and unpleasing to the eye—objects which, in themselves, are quite distinct, became blended with each other, and with another object, which had more exalted pretensions. Those minds which first cultivated expansive views of theology were, doubtless, the first to combine, in architectural structures, such a character of expression as should render them suitable to the devotional purposes for which they were intended. In heathen temples we may, therefore, distinctly recognise the three leading principles of *Fitness*, *Beauty*, and *Expression*.

These principles are developed, in the early history of architecture, with such peculiar force, that to adduce instances of their employment is scarcely necessary. That heathen temples were *fitted* for their respective uses, there can be no doubt, since they were constructed expressly for certain purposes; and, though we are not sufficiently acquainted with the exact details of the services performed in them to be competent judges, there is just reason to believe that *fitness* formed an essential part of the merits of the heathen temples. This opinion is confirmed by other instances in the progress of architecture; such, for instance, as the early Christian churches. In them we perceive that the general plan of the building is expressly founded on the principle of fitness for particular purposes, as will be hereafter noticed. For the credit of human art, we may reasonably conclude that, when the choice between fitness or utility, and beauty, was unfettered, men naturally preferred engrafting utility on beauty, as an essential feature of design; and this is confirmed by all that we know of early architecture. To some it may appear that this is advancing a mere truism, and asserting that of antiquity which is equally true in all ages. To this we may observe, that the object of this paper is directed, not only to consider the *principles of design* as such, but to show, by examples, that these principles, obvious as they appear to be, are not acted upon, at the present time, in the manner in which we have just reason to believe they were acted upon by the ancients in their heathen temples, and by the early Christians in the erection of cathedrals and churches.

In the heathen temples, magnificence and harmony shine with a lustre which has excited the admiration of all ages. Suited to the climate, the deep shadows of the Grecian portico were surmounted by a lofty and magnificent pediment, on which sculptural enrichments displayed the chivalry of the heathen theology;

while, in other instances, sculptured figures, carved on the frieze, indicated the conquests of warriors, and the subjugation of foreign nations. All these imply the immediate and vigorous application of the principles of design to the objects in view; and, if we pursue this view of the subject to the Gothic churches of the early architects, we find the same principles actively enforced. In the early Christian churches, the cross is the prevailing form: here we trace the operation of fitness, not so much in an architectural or mechanical point of view, as in a feeling of religious sentiment. The mind of the early Christian, full of adoration for the symbol of his religion, considered this form most fit for the temples of Christian worship; and thus the forms of nearly all the English cathedrals, and a large portion of parochial churches, are resolvable into a distinct principle of what, in the above sense, was considered fitness as a type of the cross.

In another respect, the ancient Christian churches present a peculiar feature of fitness; viz. in their being admirably adapted for the processions which at that time formed an important feature in the services of the church.

In respect of *Expression*, the early Christian churches, as well as the heathen temples, present admirable examples of design; so much so, that it is scarcely necessary here to comment upon them. No one who has visited any of the best English cathedrals can, for a moment, doubt that the exact *expression of style* has been obtained which answers the desired end. A reflecting and intelligent mind cannot enter the walls of our venerable cathedral churches, without feeling impressed with a deep sense of how much architectural expression can tend to promote solemn and devotional feelings in the mind: the long-drawn ailes, the lofty roofs, the clustered columns, and the richly ornamented windows, are admirable practical expositions of *expression* as a principle of architectural construction.

Let us now apply to modern churches the principles which have thus been briefly indicated as regards fitness, beauty, and expression. For the worship of the ancient heathen, we have seen the proud and majestic temple, fitted for its peculiar use by appropriate ornaments, and rendered expressive by harmony and magnificence. In the ancient Christian churches we find a wide departure from the heathen temple; a different kind of fitness, indicated by a different form; a different kind of beauty, and a different kind of expression: the form varied from a simple parallelogram to a cross; the details of classic architecture, founded on imitation of trunks and beams, varied to an immediate imitation of vegetable forms; and the expression of simple harmony and majesty varied to a totally different combination of forms; as different, indeed, as it is possible to con-

ceive ; a difference nearly as wide as that which exists between a horizontal and an upright line, between the broad masses of sandstone rocks and the towering columns of basalt. In these several deviations we distinctly trace the operation of the same principles of fitness, beauty, and expression, but developed in a mode corresponding to the circumstances of the case.

Between the ancient churches of the early Christians and the churches now used by Protestants, nearly, if not quite, as great a difference exists, as regards principles of architecture, as that between the heathen temple and the early Christian church. The superstition which first dictated the form of the cross no longer remains ; and, as a matter of superstition, no intelligent architect would deem this form deserving of attention. As regards beauty, the elements of what is commonly called Gothic architecture seem the product of an exceedingly refined taste ; which, having derived its forms from vegetable phenomena, has selected the most obvious and most decided source of beauty as regards form : and hence, also, the beauty of expression, as regards architectural buildings, is dependent on the source whence such forms are derived, as well as on the influence of early associations. Beauty of form, and force of expression, are often intimately combined ; but, in the consideration of the general principles of design, it will be more conducive to clearness, as well as more conformable to the general features of the subject, to consider beauty as a quality intended to please the eye, from the expression of a character, which, without aiming at mere ornament, satisfies the mind.

We see that, in ancient times, certain fixed principles were applied to the erection of public edifices ; and we learn that these erections were made, not from mere imitation, but from the necessity of adapting them to new modes of thinking, and new purposes of utility. The example of striking out a new path is at least worthy of admiration ; and it is one object of this paper, to consider how far, also, it is capable and worthy of imitation.

With reference to churches, let us consider what is now the usual practice. The day of cathedrals is gone past ; and, as regards these proud memorials of art, these magnificent conceptions of the human mind, we view them with too much reverence to propose to bring them within a formal modern rule. Constructed by masters of the art, they remain powerfully indicative of how much influence mere stone and lime and wood can impress upon the mind. As regards modern parochial churches and chapels, a very different feeling ought to prevail. In the cathedral, we contemplate only a record of the past ; in a parish church the present is before us ; and the welfare of society is connected with the consideration of a place where large masses

of society weekly receive instruction. The fitness of a parish church has, therefore, immediate reference to this object; and, arising out of this, the following observations occur.

Neither room for Roman Catholic processions, nor a large space for private adoration to images, &c., is now required; yet the generality of churches are built on the same plan as when these objects were essential. An oblong form, and narrow aisles, are adopted, not from principle, but from imitation. A nave and aisles, in a Protestant church, are equivalent to a stage in a theatre where performers no longer act, but where addresses are merely read by some one in the midst of the auditory. This results from imitating precedents, and nursing ancient prejudices, instead of boldly adopting new and appropriate principles of design.

On the general principles of design are based the peculiar exigences of each particular case. The same principle of fitness which applies to the ancient Roman Catholic church applies to the modern Protestant church; but it is, or ought to be, directed to the attainment of very different objects. Beauty, if intended to please, should be also modified by the intended use of the edifice; thus, ornaments which are appropriate to a court of justice may be unsuitable to a theatre; and the expression of style which suits a church would be altogether misplaced in a ball-room.

Having thus briefly commented on the nature of fitness, beauty, and expression, I shall proceed to consider their application as general principles of design.

I have already alluded to the circumstance of ancient temples being fitted for their proposed use, and, in a subsequent period, of the Roman Catholic cathedrals being, also, especially adapted for the processions and ceremonies peculiar to the worship of that church. In these cases, the architect seems first to have studied the nature of the accommodation required, and then the best method of accomplishing the effect which it was desired to produce: in other words, fitness formed the first consideration in the art of design. Subserviently to this, beauty was added, as an enrichment; and the conception of master minds stamped dignity and grandeur on their work, by giving it an expression suited to the solemn purposes for which these structures were destined.

It would be difficult, in the whole range of architectural design, to imagine two objects more different than those proposed to the designer of a Roman Catholic cathedral, and a modern Protestant church: yet the latter is almost invariably designed, *not on any original principle, or consideration of fitness for the desired object, but from imitation of what has been done before.*

That every one should see and hear the preacher, seems one

of the most obvious considerations as regards the fitness of a parish church. This accommodation could not fail to obtain some attention from every contriver of a church who should study its arrangement on any fixed principle; but in how few, even of modern churches, do we find this object effected! From imitation of ancient forms, we generally find churches built in an oblong shape, and divided into aisles. Hence a large portion of the auditory are altogether removed out of the compass of an ordinary voice; and this is so evidently contrary to the real purpose of the place, as to evince an absence of due regard to correct principles of design.

As regards *Fitness*, I consider it to imply *the best possible adaptation of the means placed at the disposal of the designer, to produce whatever is admitted to be desirable and convenient for the intended purpose; and the avoiding of every thing that is objectionable, to the utmost extent compatible with the economy which limits the compass of the design.* Fitness, as comprising these objects, undoubtedly takes precedence of beauty. Expression of style is, also, altogether subservient; and the skill of the architect is best shown, when, having obtained utility, he adds appropriate decoration, and gives the whole a suitable expression. In nearly all old churches, there are many positions in which it is impossible *either to see or hear* the preacher: this results from their never having been intended for such a purpose. But, in a modern church, it does not seem based on any correct principle, that many seats should be fitted up for persons to attend regularly, and hear the liturgy and sermon read from a fixed place, while a massive stone pillar shuts out, by a total eclipse, the whole of the pulpit from the view of the hearer; and, in a like manner, prevents the preacher from seeing a portion of his audience. To the holder of a pew so situated it must be exceedingly annoying; and I have again and again wondered how a defect so obvious could be continued so long. It is one of the anomalies arising from this mode of building, that the seats for the poor are often much better placed than those expressly intended for their wealthy neighbours. The writer, a few years ago, on going to a church in London, to hear the Bishop of Hereford preach, selected one of the best situations, and sat down very comfortably on a seat open to the public, but expressly intended for the poor. The vergers kindly offered to show him to a pew, and led the way to a place, not only *behind the preacher*, but with a large pillar intervening. I need scarcely add that the offer was declined, and the former position resumed. A favourable and proper position of the auditory is, in short, so very essential an object in a place of public worship, that the principle of fitness is invaded by any defect in this particular. I have lately seen a modern church, where, on one Sunday, a

stranger might lean over the preacher's shoulder, and read out of his book; and on the next sit on a seat prepared as one of the ordinary sittings in a pew, and be directly *under the very feet of the clergyman*; the floor of the pulpit actually forming a roof to the pew. To see and hear well are essential to the proper objects of a Protestant place of worship; and every church in which the preacher is eclipsed by pillars, or the auditory removed beyond the ordinary limits of distinct hearing, is defective in the principle of fitness; or, in other words, it is devoid of the advantages which it ought to possess, and it inflicts on a portion of the audience an inconvenience which is glaringly inconsistent with the objects of the structure.

But it is not only those who sit behind pillars, or at a vast distance, that have reason to regret the want of a correct principle in planning a church: the position of the seats seems, in most churches, to be guided by mere caprice; or, at best, the only principle observed seems to be that of making them either parallel to, or at right angles with, the walls. With the exception of the organ galleries, and one or two side pews near the pulpit, there is not, in many churches, a seat on which a person can look directly forward to the preacher. By a very simple train of reasoning, it might seem evident that, as the great object of the attendance of so many persons is to hear the discourse, the comfort and accommodation of each and every person, with a view to this, is essential to the *fitness* of the design. So far from this principle being generally observed, we not only have a view of the preacher at every possible angle of obliquity, but are sometimes placed so as look in the very opposite direction.

Now, as a principle of design for a church, I consider it essential that every person should not only see and hear, but should also look directly towards the preacher. This may be effected by a proper arrangement of the pews, as concentric circles; and by having whatever pillars are required for the support of the building placed in, or from the termination of, aisles converging towards the pulpit. The effect of this, as compared with the present mode of building, and an illustration of this, and other principles in the construction of churches, and other public buildings, will be considered in another paper.

ART. II. *On the Article in the London and Westminster Review, entitled, "Barry's Design for the new Houses of Parliament."* By CANDIDUS.

PASSING over the offensive proem to this article, which is not only in singularly bad taste, but, withal, is so utterly irrelevant,

that it may fairly be suspected to be an addition of the editor's own, I shall dismiss from consideration the objections urged against the old site being retained, and the style for the intended structure having been restricted either to Elizabethan or Gothic. These are points for which the author of the accepted design is no more answerable than any of the other competitors; therefore, to dwell so much upon them looks very much like a determination on the part of the writer to excite prejudice against Mr. Barry in particular; his drawings being the only ones referred to, and made responsible, as it were, for circumstances over which he had no control.

As far as that gentleman is concerned, the question is not whether a better site might not have been selected, but whether he has succeeded in the design itself. Let us hear the opinion of W. E. H., for those are the reviewer's initials. It is, then, he assures us, "extremely well adapted for a college of abbots, or a great metropolitan cathedral; but therefore entirely inappropriate for a hall of national representatives." How far it looks like a college of abbots, I pretend not to say, being unacquainted with any example of the sort; but I certainly cannot detect the slightest resemblance to a cathedral. As well might the reviewer have said that it reminded him of Windsor Castle, or that Windsor Castle bears a strong likeness to Westminster Abbey. The style, it is further contended, is strictly ecclesiastical; and, most undeniably, there are many single features and details common to religious edifices: but there are also others incorporated with them; while the general character, masses, proportions, distribution, and composition are altogether different from those which prevail in ecclesiastical examples. If pointed windows are sufficient to stamp the whole as decidedly ecclesiastical, then it was unfortunate that any latitude was allowed; and the architects ought to have been strictly confined to the Elizabethan, or suffered to go no further back than to the earlier Tudor, with its square-headed apertures. However, even the critic himself allows that, if the Houses of Parliament are to be erected in the immediate vicinity of the Abbey, they ought to be in a style that will accord with it. Yet, although as remote in character from that pile as anything at all partaking of the same style can be, Mr. Barry's design is, it seems, too decidedly ecclesiastical.

After reading the above quoted opinion, few will be prepared for the following one, which occurs a page or two after:—"With respect to the design, considered only in reference to the designs of other architects, it may be allowed to be superior to any of those which have been exhibited." It is true, this does by no means contradict the former assertion, and it even shows that the reviewer does not decry Mr. Barry for the purpose of favouring

any one else; but then so much the stronger is the censure, thus implied, of all the other architects; nor is any exception made in favour of Mr. Savage, notwithstanding that long quotations from his pamphlet are introduced, and the opinions advanced in it warmly commended; consequently, the passing by his design altogether amounts to a tacit admission that Mr. Savage either did not act upon the principles he himself has laid down in regard to style, or signally failed in illustrating his doctrine by his own successful application of it. Perhaps we shall not be very wide of the mark in conjecturing that it was the exhibition itself which operated like euphrasy on Mr. Savage's critical vision; and convinced him, that he himself, as well as his brethren, had all adopted very narrow and mistaken views as to architectural style. Nevertheless, his hints (and, as far as they go, they are certainly worth consideration) need not be thrown away, but will, it is to be hoped, be practically applied, with a fortunate result, on some future occasion.

To return from Mr. Savage to W. E. H. — Is the latter serious, when he asserts that a stranger, if set down before Mr. Barry's building and the Abbey, would mistake one for the other? At any rate he is, though perhaps unintentionally, as little complimentary towards the Abbey as towards the accepted design; for it is tantamount to saying that what has hitherto been regarded as one of the noblest specimens of ecclesiastical architecture in the kingdom, has really so little of the character befitting it, that it might easily be mistaken for the Houses of Parliament! Perhaps, after such an opinion (for which he may be left to be tried by a jury of antiquaries), we ought not to be greatly astonished when we find him afterwards, not only terming Westminster Hall "a vast stone barn," but actually suggesting that the Abbey itself might as well have been appropriated to the purposes of the Houses of Parliament, without a needless expenditure of the public money! This is startling enough; particularly when it is considered that, in order to accommodate it to any such use, the whole interior of the building must be gutted, and fitted up quite differently, and numerous committee-rooms and offices provided; unless the reviewer would do away with the latter altogether, and have no more than the two halls of legislature, without adjuncts or *encumbrances* of any sort. It is hardly worth while asking if he considered the other numerous difficulties which would interfere with so notable a scheme; because I do not imagine that he considered more than what appeared to him a capital joke; which being the case, it is rather strange he should have omitted to inform us which of the two houses of legislature he would have placed in the *nave*.

To suppose that W. E. H. was at all in earnest, would be calling his judgment in question altogether; since nothing can

be more chimerical, or prove greater ignorance of the subject on which he has undertaken to enlighten others, than such an absurd and preposterous idea. If, on the other hand, we are to look upon it as a mere pleasantry, it is an exceedingly heavy and clumsy one; and, moreover, of such a kind as to throw a degree of ridicule over the whole matter. What credit for sincerity, even, can a writer obtain, who, while professing to discuss an important question, studiously seizes hold of every occasion to set it in a ridiculous light? Far am I from wishing to interdict the use of pleasantry, and exclude it entirely from criticism and argument: but, then, it is a rather dangerous ally; one that requires to be held in check; for, if once allowed to get the upper hand, it is apt to play most unseemly antics. Just now, this caution is hardly superfluous; for, judging from most of the architectural pamphlets that have lately been put forth, it would seem that the writers labour hard to make up in drollery for lack of argument and criticism; indulging in a strain of grotesque facetiousness, that, although allowable in a professed jester, like Tom Hood, does not say much either for the good taste or the ability of those to whom we look for real information and criticism. In such strain of silly impertinent jesting are Mr. Wilkins's remarks about patent railroads being required in order to reach the upper rooms in Mr. Barry's tower. Indeed, Mr. W's tone throughout argues nothing so much as a determination to conjure up absurdities of his own invention, in order that he may attribute them to Mr. Barry's design; forgetting, or choosing to forget, that, upon a not very late occasion, he was himself assailed after the same fashion by others, and is liable to be so assailed again, more deservedly, too, than before; since he has now sanctioned, by his own employment of it, that buffoon mode of attack, which is sure to excite a laugh among those who, like idle mischievous boys, relish the fun of the dispute, caring very little for the merits of the case, or how it may turn out. Whether ridicule be or be not the test of truth, most assuredly it is a very fallacious test, or even worse than none, in criticism; because, if once we make up our minds to set at nought every other consideration, nothing is easier than to show up in the most ridiculous light the finest works of architecture, and, indeed, of every art. By means of a little cleverness in burlesque, and tact in misrepresentation, a man might make the *Iliad* appear a tissue of nonsensical fables and absurdities, where common sense is every moment shocked; nor would it be a more difficult task to make the Parthenon itself cut a very humiliating figure.

But I am now, besides straying widely from my proper subject, touching upon one that would of itself furnish ample matter for a separate paper. I return, therefore, to W. E. H., the

reviewer; yet merely for the purpose of noticing one or two singular remarks and opinions he has thrown out. "Some critics," he says, "assert that a preference should be given to the style chosen by Mr. Barry, as national; which is tantamount to a declaration (a strange one, certainly), that pointed architecture has never been cultivated with success on any part of the Continent." Before I can admit this, I have to be convinced that, in order to be "national," a style must be exclusively so, and partake of no mode of building employed in any other country. It may be so: but, in such case, where are we to look for a national style, either among ourselves, or any where else? It would also seem to follow, that pointed architecture is not a *genus* comprising many styles and their varieties, but a single uncompounded style, exhibiting itself the same, not only in the same country, but in different ones.

He afterwards contends that the term "pure Gothic" is "pure nonsense;" it being applied, not to the earlier stages of pointed architecture, where it exhibits itself in its primitive forms, but to that where it had attained its maturity, and completely developed itself in all its parts. Allowing that the term is not exactly logical, to object to it now, that it is established and understood, is mere captious cavilling, akin to that species of minute and trifling criticism, which would explode the term Gothic itself as an erroneous one. Supposing that a better and perfectly unexceptionable term could be coined and brought into vogue, what would be gained beyond the mere change of a word? In all other respects, we should continue exactly where we are at present; our knowledge not in the slightest degree extended, nor our ability at all advanced. Terms originate arbitrarily and casually in architecture, as well as in other arts, and in all the affairs of life; and it might be shown that many have obtained meanings altogether different from those they had when first introduced. Most absurd, then, is it to object, as some have done, to the term "Gothic architecture," as implying reproach; when, in reality, it does no such thing, being neither so intended, nor so understood.

Let us, however, turn to something more important than squabbling about words, and see what opinion the reviewer entertains of the Gothic style itself; which the following passage will show that he looks upon with no common eyes. The beautiful effect of groined roofs, he observes, "is owing, not to the arches being pointed, but to the elliptical lines, of which the pointed arches are merely the intersections. The eye is pleased, because it does not dwell upon the point where the intersection takes place, but follows out and loses itself among the curved lines beyond. This theory explains the reason why the external appearance of a pointed window, where the elliptical

hies, of which it is formed cannot be traced beyond the point of intersection is stiff and formal; and such windows are in general scarcely, if any thing, better than *triangular holes in a wall*!!

This last is so novel, not to say unwarrantable, an opinion, that, were it possible, one would almost suspect the reviewer derived his notions of Gothic windows from such examples as Strawberry Hill, and other *soi-disant* Gothicism and Gothicismings, where the windows are mere openings, without mouldings or finish of any kind; whereas, besides the decoration belonging to them as apertures, Gothic windows are, with some few exceptions, and those early ones, remarkable, beyond those employed in any other style, for exhibiting the principles and characteristics of the style to which they belong. Each separate window forms a system of apertures, mostly arched; and the tracery which fills the arch head above presents almost every possible combination of curved lines, combining intricacy with regularity and harmony. Herein the preeminence and variety of Gothic windows are indisputable: nor do I imagine that any one, save the reviewer, will be hardy enough to deny it.

He has, perhaps, a licence for seeing either less or more than other people; for he goes on to say, "Hence the unredeemed ugliness of the three principal compartments of Mr. Barry's river front, in which there are no less (fewer) than sixty openings of this description:" meaning, I presume, mere naked holes in the wall. But hence, too, it would seem to follow, that the defect complained of, and the "unredeemed ugliness," are to be attributed, not so much to want of talent in the architect, as to the style itself: for the design is not censured for poverty of style; and, as we have seen, it is admitted to be superior to any of the others: so that even Mr. Barry's rivals will hardly relish the charge of "unredeemed ugliness," here brought against him; because his acknowledged superiority only thrusts themselves down several degrees lower.

"Even in Grecian architecture," continues the critic, "it may be remarked, that pediments, or pointed roofs, form the least pleasing features of the style; while the ornaments of a Corinthian capital" (an order, by the by, hardly known to pure Grecian architecture) "are superior to any other, from the more graceful combination of curved lines." Many will, perhaps, be of opinion, that gracefully curved lines exhibit themselves still more decidedly in the volutes and spirals of the Ionic capital. However, we will let that pass, my chief object in quoting the above passage being to call attention to what is said respecting the Greek pediment; which, so far from being regarded as a feature at all beautiful in itself, or as of value in the composition, by throwing in contrast and variety, breaking the monotony of horizontal lines, and distinctly marking the centre,

is considered by this critic almost in the light of a defect. It may be presumed, therefore, that, where not dictated by necessity, he would rather suppress the pediment of a portico, as detracting from consistency and harmony. Yet, if the taste of the Greeks themselves be of any authority, such form may very well be supposed to have some intrinsic beauty to recommend it; because we find it to have been employed by them, from choice, both in sarcophagi and in merely ornamental features.

I shall not pursue W. E. H. any further, except to remark that, when he asks, "Are the forms of the forest exhausted in the five orders of Grecian columns?" he expresses himself not a little fantastically, and, withal, more inaccurately than is becoming in one who, as we have seen, affects such scrupulous precision in the use of terms. None but an absolute tyro in the art would now talk of the *five* orders of Grecian columns; there being, at the most, but three; while one of them is of such rare occurrence as to be little more than barely admissible on the list. Most assuredly, he is quite correct in supposing that the "forms of the forest" have not been exhausted in those of the ancient orders; and for this reason, that in no respect have they served as prototypes for them, or can do so, although the shaft of a column may be likened to the stem of a tree. The "forms of the forest" would produce a style altogether different from that of Grecian architecture, and, in fact, from every other. All that the writer means, I presume, is, that numerous other vegetable forms, and dispositions of them, might be employed for foliated capitals, besides those adopted for the Corinthian capital; an opinion I by no means dispute: I only censure the affected, and almost nonsensical, obscurity in which it is wrapped up, as if the writer was afraid of announcing it in a less ambiguous mode.

If it were W. E. H.'s object to start fresh difficulties and perplexities in regard to the new Houses of Parliament, he has succeeded. He may, or may not, annoy Mr. Barry by his remarks; but he will offend many persons besides, antiquaries especially; nor will he much gratify any of the other exhibiting architects: yet hardly will they consider him a very formidable censor, or care much for his opinions; for his criticism consists of little more than a knack of quarrelling with every thing, sometimes almost with himself, so little do some of his remarks agree with each other. In architecture he is more original than profound; and he may, without much injustice, be set down as belonging to that class of critics whom Mr. Wilkins would style "*heaven-enlightened*."

London, June 25. 1836.

ART. III. *Experimental Essays on the Principles of Construction in Arches, Piers, Buttresses, &c.* By WILLIAM BLAND, Esq. Essay IV. 1. *Experiments with Arches placed on Piers, having Weights and Structures upon them.* 2. *Experiments with Piers that will just balance under the Lateral Force and Weight of different Arches.* 3. *Experiments with Arches of varied Span and Form, acting against each other, being placed on Piers of unequal and equal Heights.*

(Continued from p. 360.)

THE three following diagrams (*figs. 144, 145, and 146.*) represent experiments with a semicircular arch, and two of its segments, placed on piers of equal bases, to ascertain their respective lateral forces, by the difference of height of the piers on which they respectively will balance.

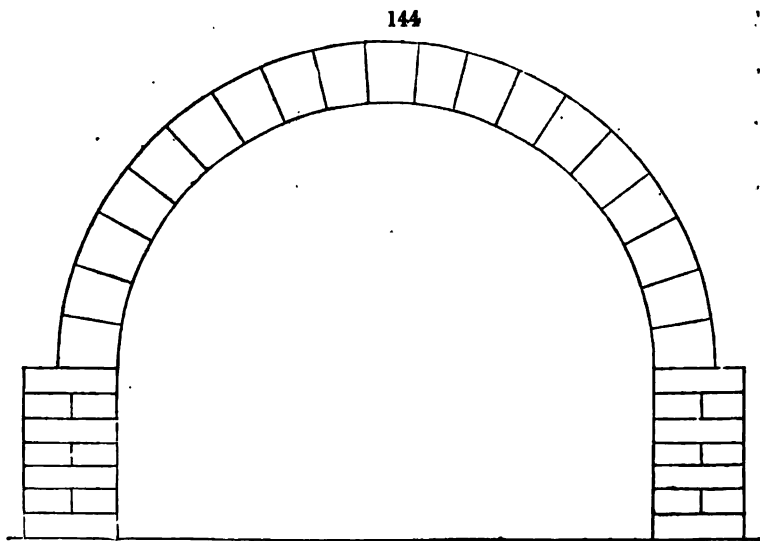
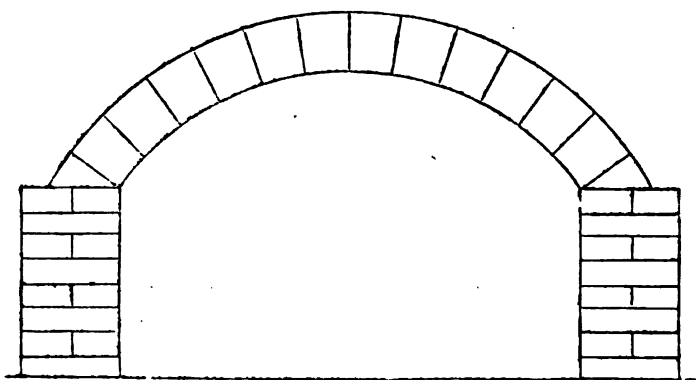


Fig. 144. represents an arch of 24 in. span, and 19 in. high, and composed of twenty voussoirs, each of the weight of half a pound, which just balanced on piers of 7 in. in height; the base measuring 4 in. by 4 in. The weight of the arch is 10 lb. The height, from the base line to the under part of the keystone, is 19 in.

The arch *fig. 145.* just balances on piers 8 in. high. The weight of the arch is 6 lb.

The arch *fig. 146.* just balances on piers 7 in. high; and its weight is $4\frac{1}{2}$ lb.

145



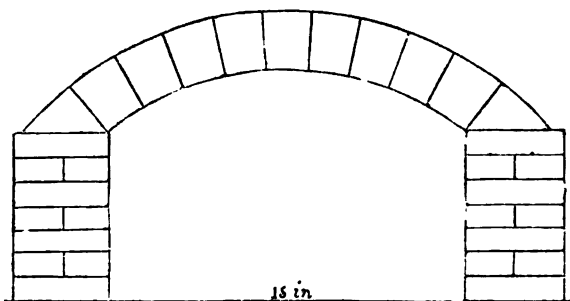
The following are comparisons between the different arches of equal span and rise : —

An elliptical arch of 24 in. span, and 8 in. rise, just balances on piers 4 in. by 4 in. base, and 5 in. high.

A cycloidal arch of 24 in. span, and 8 in. rise, just balances on piers of 4 in. by 4 in. base, and 5 in. high.

A segmental arch of 24 in. span, and 8 in. rise, just balances, also, on piers of 4 in. by 4 in. base, and 7 in. high.

146

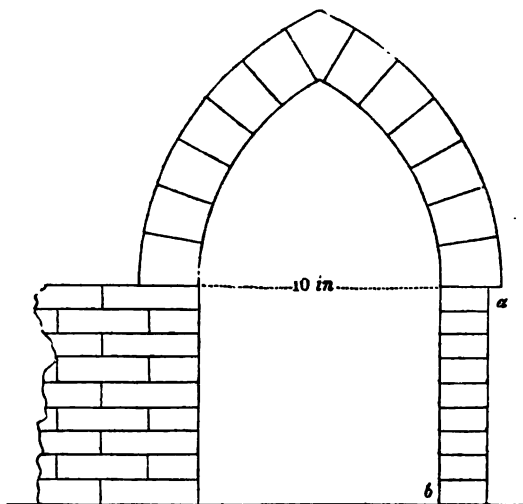


This last experiment with the segment of a circle correctly confirms what was observed of that form of arch when treating of the extrados of the ellipse and cycloid, as given in Essay I.

The Gothic and Roman arches of equal spans, being placed on piers of the same dimensions of base, balance as under : —

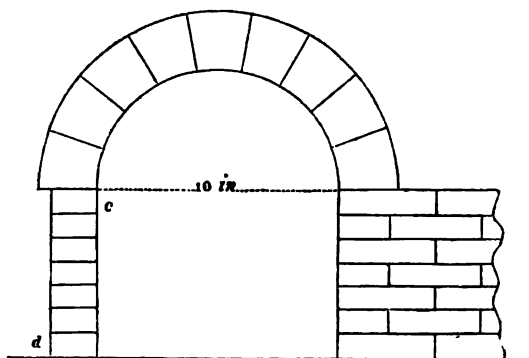
Relative to the Gothic Arch fig. 147. — When the inside of the lowest voussoir coincides with the inside of the pier *a b*, as at *a*, this arch balances on piers 9 in. high ; the base measuring 2 in. by 4 in.

147



Relative to the Roman Arch fig. 148. — When the inside of the lowest voussoir coincides with the inside of the pier (*c d*), as at *c*, the arch balances on piers 7 in. high, the base measuring 2 in. by 4 in. —

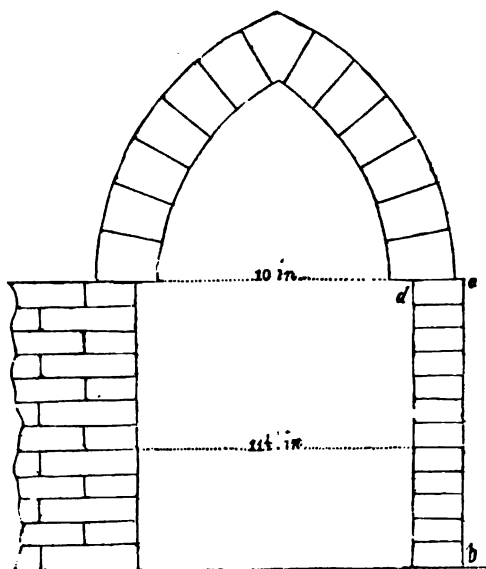
148



Again, the same two arches, being placed with the intrados of their lowest voussoirs at a certain distance within the line of the piers, balance as follows : —

Relative to the Gothic Arch fig. 149. — This arch balances on the pier *a b*, which is 12 in. high, having 2 in. by 4 in. for the base. The arch projects within the pier, at *a*, three quarters of an inch, or it would not balance. When the pier is reduced to 9 in. in height, the arch will carry half a pound ; and, when

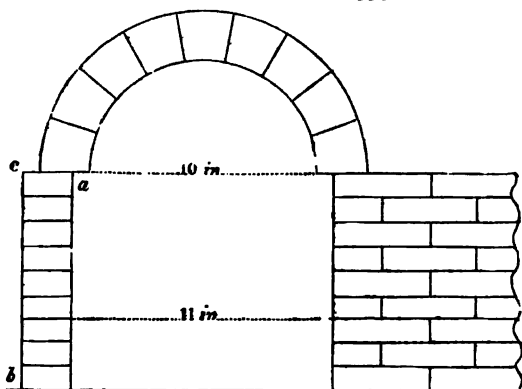
149



reduced to 6 in. in height, it will carry 3 lb. well, or twice the weight of the pier of six bricks.

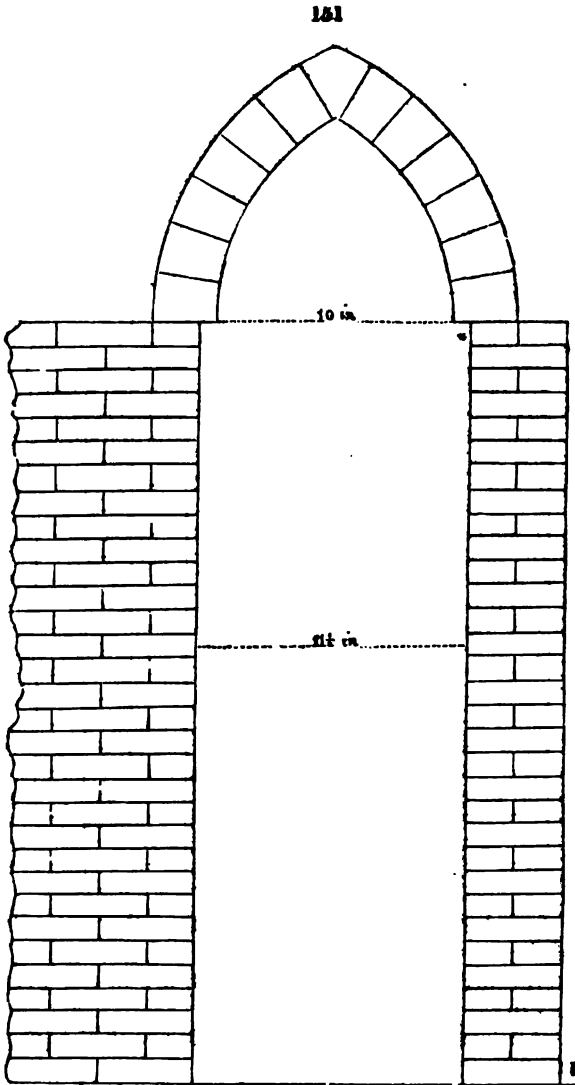
Relative to the Roman Arch fig. 150. — This arch balances on the pier *a b*, which is 9 in. high; having the same base as *fig. 149*. The arch projects within the pier, at *a*, half an inch.

150



When the dimensions of the bases of these pillars supporting the Gothic and Roman arches are increased to 4 in. by 4 in., these arches will then balance at the height shown by *figs. 151. and 152.*

The Gothic arch *fig. 151.* balances on the pier *a b*, of 82 in. in height.



The Roman arch *fig. 152.* balances on the pier *a b*, of 29 in. in height.

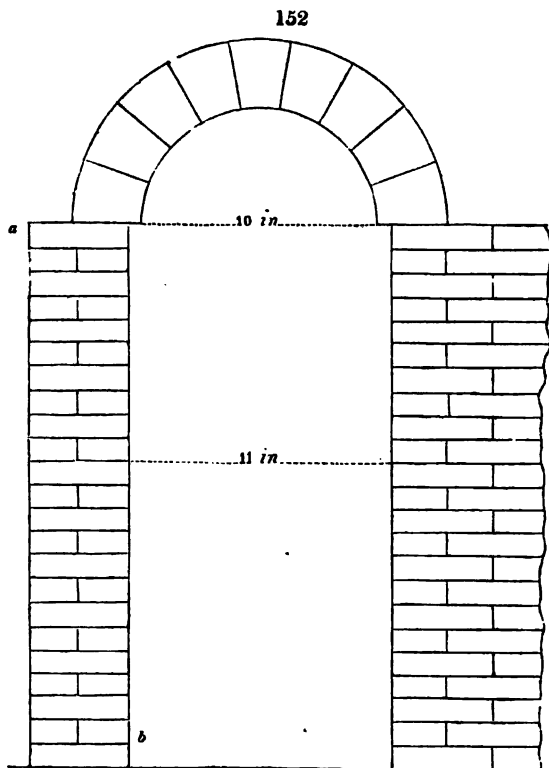
On increasing the dimensions of the piers of these two arches, by making their bases 6 in. by 6 in., and placing them upon the same, the balancing heights were found to be, —

xx 2

For the Gothic arch *fig.* 153., 96 in.

For the Roman arch *fig.* 154., 72 in.

The balancing heights of the Gothic and Roman arches upon the several piers, from *fig.* 147. to 157., bear the same proportion to each other, within a fraction, throughout the whole of the eight last-mentioned experiments; and this circumstance



may therefore be considered as a proof of the correctness of the lateral forces.

The lateral forces of *figs.* 147. and 148. are in the proportion of 9 in. to 7 in.

The lateral forces of *figs.* 149. and 150. are in the proportion of 12 in. to 9 in.

The lateral forces of *figs.* 151. and 152. are in the proportion of 32 in. to 23 in.

The lateral forces of *figs.* 153. and 154. are in the proportion of 96 in. to 72 in.

Again, with regard to the pillars, or piers, to the balancing heights: —

Relative to the Gothic Arch.

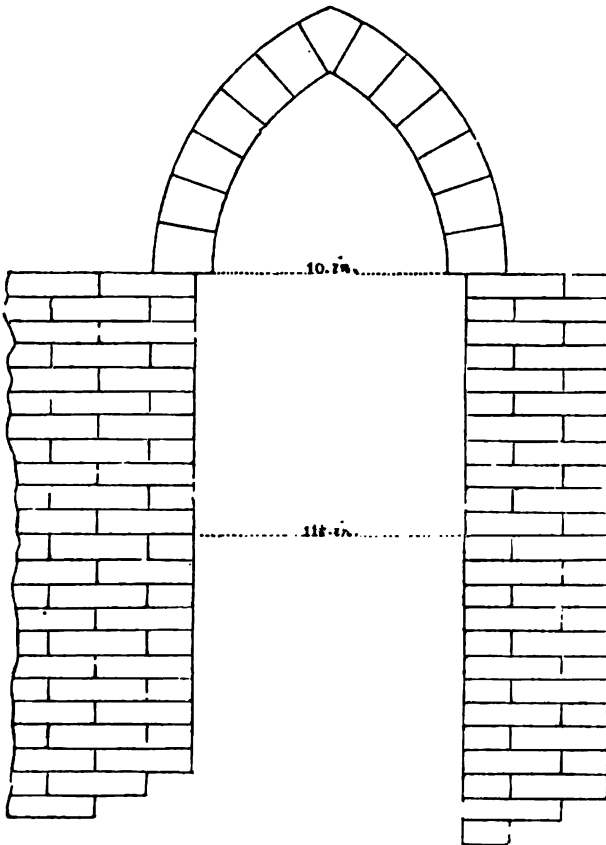
Fig. 147., the proportion is as 2 in. to 9 in., not quite one fifth.

Fig. 149., the proportion is as 2 in. to 12 in., or one sixth.

Fig. 151., the proportion is as 4 in. to 32 in., or one eighth.

Fig. 153., the proportion is as 6 in. to 96 in., or one sixteenth

153



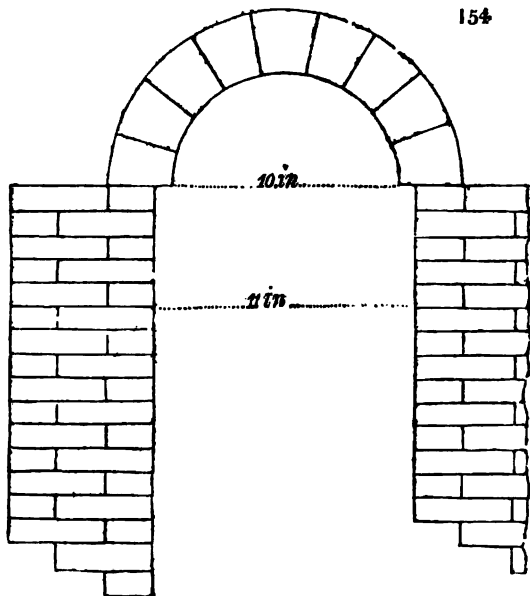
Relative to the Roman Arch.

Fig. 148., the proportion is as 2 in. to 7 in., not quite one quarter.

Fig. 150., the proportion is as 2 in. to 9 in., or nearly one fifth.

Fig. 152., the proportion is as 4 in. to 23 in., or nearly one sixth.

Fig. 154., the proportion is as 6 in. to 72 in., or one twelfth.



Of the diameter of the pier to the span : —

Relative to the Gothic Arch.

Fig. 147., the proportion is as 2 in. to 10 in., or one fifth.

Fig. 149., proportion as 2 in. to $11\frac{1}{2}$ in., or nearly one sixth.

Fig. 151., proportion as 4 in. to $11\frac{1}{2}$ in., or nearly one third.

Fig. 153., proportion as 6 in. to $11\frac{1}{2}$ in., or nearly one half.

The proportions, in this respect, of the Roman arch are all less than the above.

Of the proportions between the span of the arch and the balancing height of the pier.

Relative to the Gothic Arch, beginning with *fig. 149.*

Fig. 149., the proportion is as $11\frac{1}{2}$ in. to 12 in., or nearly as 1 to 1.

Fig. 151., the proportion is as $11\frac{1}{2}$ in. to 32 in., or nearly as 1 to 3.

Fig. 153., the proportion is as $11\frac{1}{2}$ in. to 96 in., or nearly as 1 to 8.

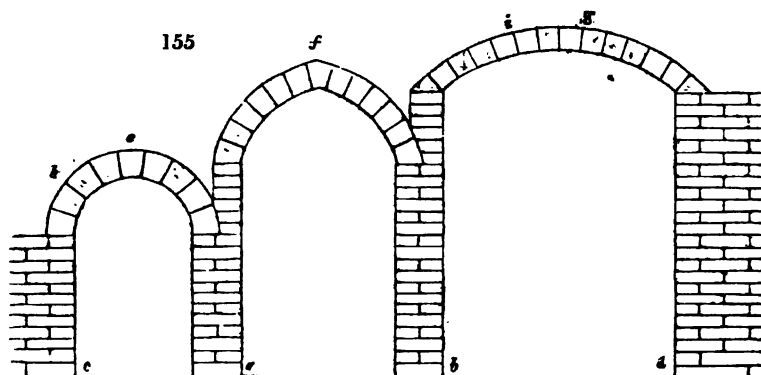
The proportions of the Roman arch, as to span, and height of pillar, are not so regular as the Gothic.

The superiority of the Gothic over the Roman arch, in regard to the greater lightness of pillar, sufficiently accounts for the general preference given by our forefathers to the pointed form ;

and, at the same time, justifies their adoption of it in the construction of our most celebrated cathedrals.

The following are experiments with arches of unequal span, and of dissimilar forms, placed on piers of different heights, and supported between two immovable buttresses:—

The spans of the arches *e*, *f*, and *g* (fig. 155.) are 10 in., 13 in., and $19\frac{1}{2}$ in. respectively. The bases of the two movable piers measure each 4 in. by 4 in.: *c* and *d* are the immovable piers, or buttresses. The heights of the piers are 12 in., 18 in., and 24 in. respectively.



Now, when a weight of $1\frac{1}{4}$ lb. was placed on the crown of the arch *g*, it caused the arch *f* to fly up, by the pier *b* being forced in. A 1 lb. weight, placed on the arch *f*, just balanced a 2 lb. weight placed on the arch *g*, but caused the arch *e* to open very much at *h*; and half a pound more being added to the 2 lb. on the arch *g*, caused both the arches *e* and *f* to fly up: the arch *e* had no weight on its crown. A weight of $9\frac{1}{2}$ lb. being placed on the crown of the arch *e*, caused the arch *f* to fly up, there being no weight upon the crown of the latter. A weight of $4\frac{1}{4}$ lb., placed on the arch *f*, caused the arch *e* to fly up, there being no weight on its crown. Upon adding a quarter of a pound more to the weight on the crown of the arch *f*, thus making the whole weight $4\frac{1}{2}$ lb., the pier *b* of the arch *g* was forced down; the arch *e* having been previously prevented from falling, by the pressure of the hand on its crown.

Again, when these three arches (*e*, *f*, and *g*) were placed upon piers all of the same height, of 18 in., with the same base, of 4 in. by 5 in., as in the preceding experiments, but the span of the arch *f* altered from 13 in. to 15 in., and having a rise of 5 in., the same as the other two arches, the results were as follows:—

A weight of $1\frac{1}{4}$ lb., placed on the crown of the arch *g*, caused the arch *e* to fly up. A weight of $1\frac{1}{4}$ lb., placed on the crown

of the arch *f*, also caused the arch *e* to fly up; and, when a weight of 10 lb. was placed on the crown of the arch *e*, it caused the arch *g* to fly up. During these three experiments, there were no other weights on the crown of the arches besides those used to make the trials, and placed as above stated.

The conclusions to be drawn from all the experiments with the three arches (*e*, *f*, and *g*, *fig.* 155.) and their piers are, that, where there is equal and similar pressure, there should be equal and similar arches and piers to meet it.

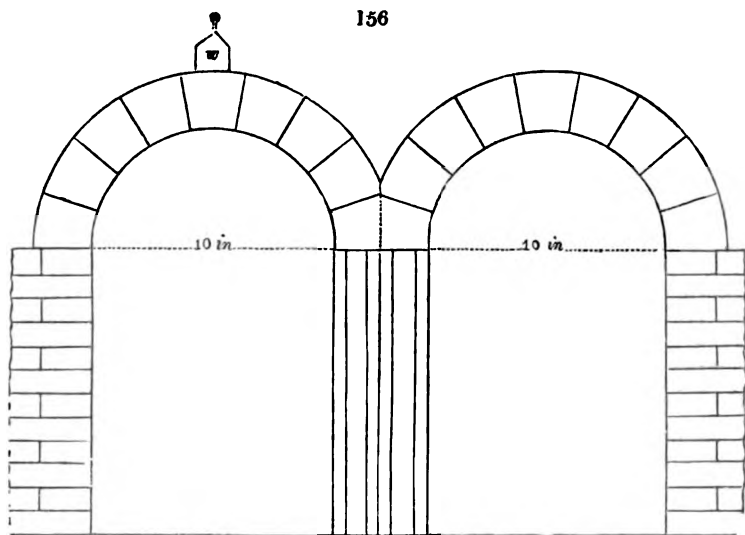
It may be observed, that the point *i* in the arch *g* of the last-mentioned figure will carry a greater weight than the crown; therefore, again proving that arches supported on piers are weakest at the crown.

The following are experiments with two Roman arches, of 10 in. span (*fig.* 156.), one end of each resting on immovable buttresses, but having the two ends which abut placed on a movable pier, varied to different heights and dimensions:—

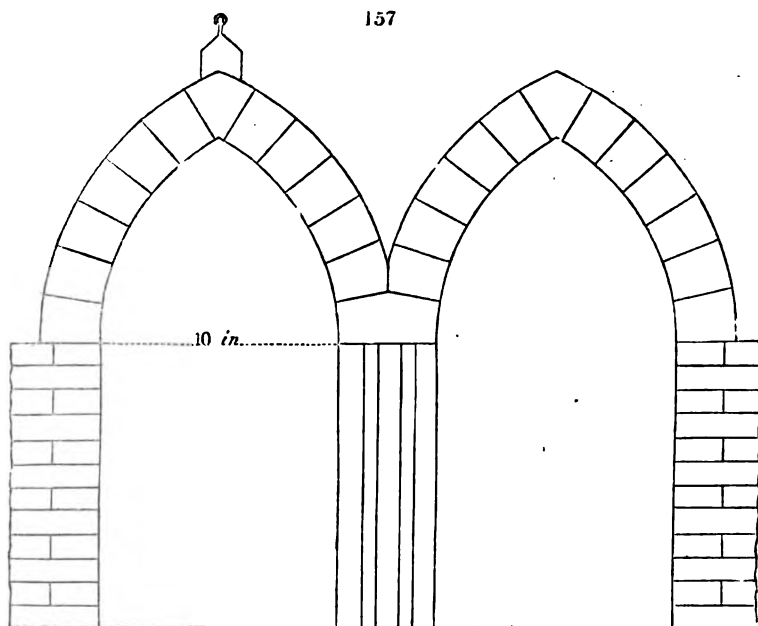
Number of Experiment.	Dimensions of the Pier.	Height of the Pier.	The Weight on the Top of the Arch with which it balanced.
No. 1	1 in. thick.	6 in. high.	3 lb.
2	2	6	8
3	4	6	28
4	1	12	2½
5	2	12	4½
6	4	12	8
7	1	18	1½
8	2	18	3¼
9	4	18	6½

Fig. 157. represents two Gothic arches, of 10 in. span, placed the same as the preceding two Roman arches; and the following are the results of the experiments:—

Number of Experiment.	Dimensions of the Pier.	Height of the Pier.	The Weight on the Top of the Arch with which it balanced.
No. 1	1 in. by 4 in.	6 in.	4¾ lb.
2	2 ... 4	6	14
3	4 ... 4	6	28 almost as nothing.
4	1 ... 4	12	2½
5	2 ... 4	12	6
6	4 ... 4	12	14
7	1 ... 4	18	2
8	2 ... 4	18	4
9	4 ... 4	18	8



The piers, for the first, fourth, and seventh experiments in the last two diagrams, were made with solid pieces of board, 1 in.



thick, 4 in. broad, and of the heights of 6 in., 12 in., and 18 in., respectively: bricks were employed for the other piers. With

respect to the difference between the strength of a solid pier and one composed of several pieces, it is in favour of the former.

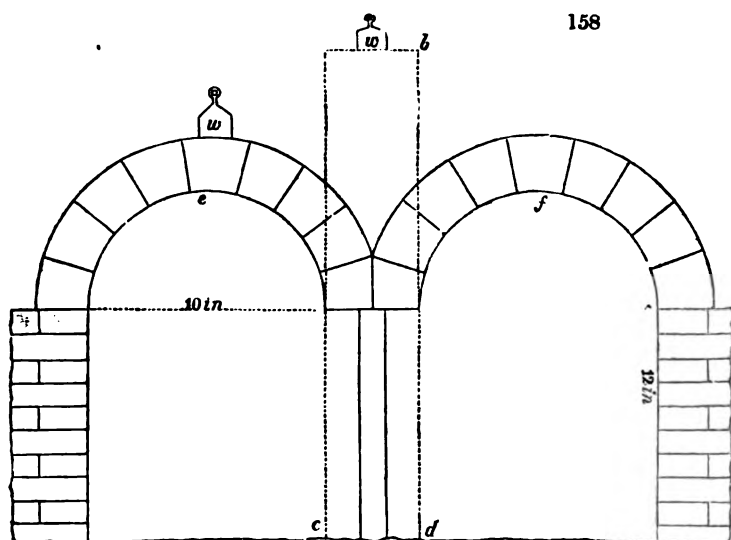


Fig. 158. represents experiments with four arches; two of Roman, and two of Gothic construction, of equal spans of 10 in., and placed upon a single pier in the centre, having immovable buttresses; the two Roman arches abutting against each other, and at right angles to the two Gothic arches.

The letters *a*, *b*, *c*, and *d* represent the Gothic arches and buttresses; and *e*, *f*, the two Roman arches. The following are the results: —

Number of Experiment.	Dimensions of the Pier.	Height of the Pier.	The Weight on the Top of the Arch with which it balanced.
No. 1	1 in. by 4 in. board.	12 in.	4 lb.
2	1 ... 4	12	4
3	1 ... 1 stick.	12	4
4	1 ... 1	12	4

The Roman and Gothic arches just balanced with the same weight.

In the first and second experiments, the pier was composed of a piece of board of 1 in. by 4 in., and 12 in. high. On a pier of these dimensions, both the Roman and Gothic arches balanced with the same weight; and, when a round stick of 1 in. in

diameter was substituted for the board, the four arches, also, balanced with 4 lb. on the top.

On comparing these experiments with the two numbers 4 of the two preceding diagrams (*figs.* 156. and 157.), it will be seen that in both instances the arches just balanced with the same weights of $2\frac{1}{2}$ lb. placed on their crowns; whereas, in the diagram of the four arches (*fig.* 158.), the weight of 4 lb. was required to cause the arches to balance; or nearly twice as much as either of the double arches.

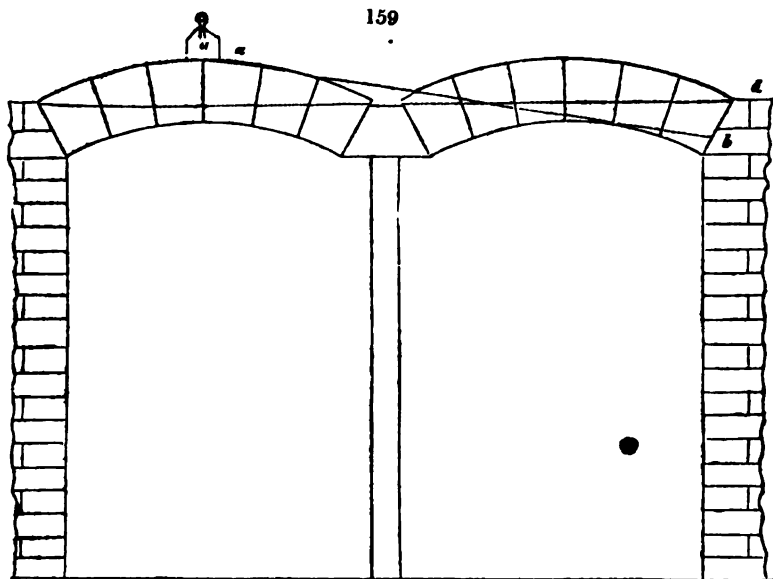
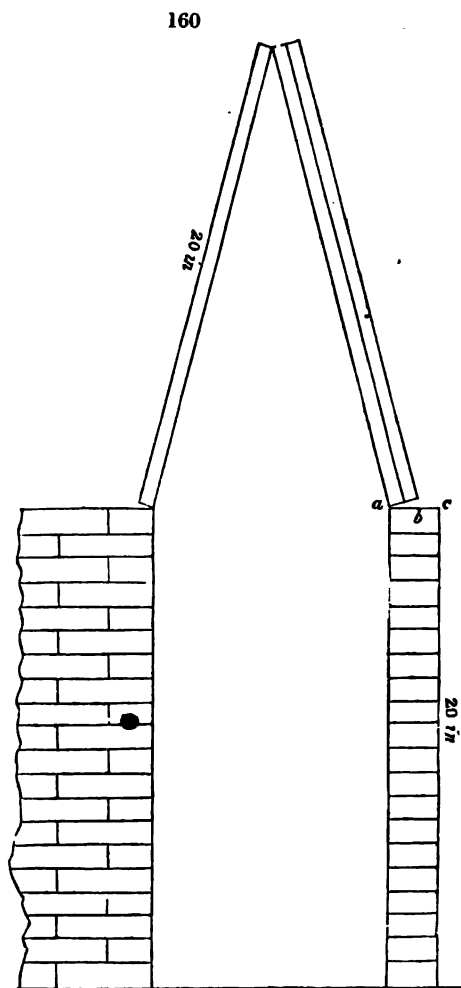


Fig. 159. represents experiments with two flat arches of equal span, each composed of six voussoirs; and spanning nearly 12 in. The pier, which was 1 in. thick, and 18 in. high, being composed of a piece of board of the dimensions of 1 in. by 4 in., and 12 in. high. Three 1 in. by 2 in. bricks were then placed edge-wise up the remaining 6 in.

These two arches (*fig.* 159.) balance with 21 lb. on the top of either of them; and this weight far exceeds that supported in the experiments of the diagrams *figs.* 155. and 156. *g.*

This superior strength is to be attributed chiefly to the being able to draw a straight line, as *c d* (*fig.* 159.), passing through, or rather within, the voussoirs of both arches, from one buttress to the other; and, if the space between the two arches, just over the pier, be built up level with the crowns of the arches, and made all solid, a straight line might then be drawn from *a* to *b*, which would be within the voussoirs and masonry. Let it,

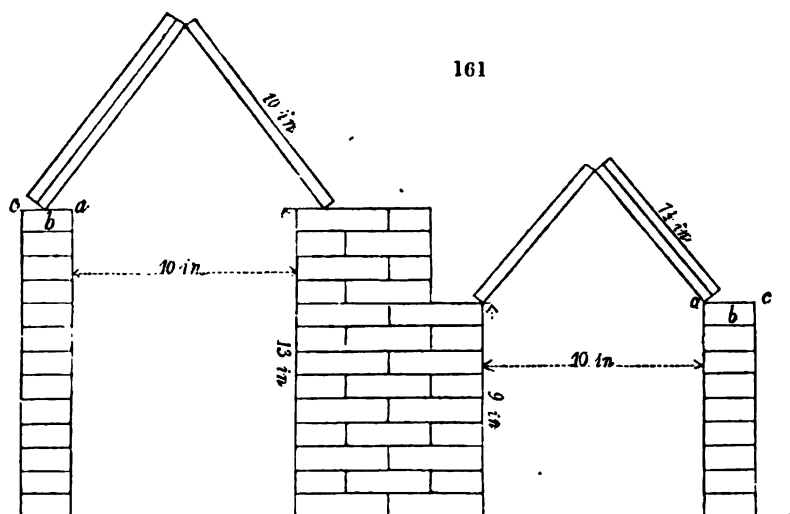


however, be remembered that the buttress must be immovable, or the arches will support very little.

In the diagrams *figs.* 156. and 157., the greatest height of the piers, or pillars, does not exceed 18 in., which is just twice the balancing height of the pier *a b* of the Roman arch *fig.* 150. Now, on increasing the pillar to 36 in., or four times the balancing height, having the same dimensions of base (4 in. by 2 in.), composed of wooden bricks, and corresponding to the piers numbered 2, 5, and 8, in the table relative to *fig.* 156., either arch carried the weight of $1\frac{1}{2}$ lb. on the crown. Upon substituting a solid pier instead of the brick one, either arch carried nearly $2\frac{1}{2}$ lb. It has been before observed, that eight of these wooden bricks weigh

1 lb.; therefore the pier in the diagram *fig.* 150. equals rather more than $1\frac{1}{2}$ lb.: consequently, when the pier is carried up four times the height, and is, therefore, four times the weight, the Roman arches, resting upon this movable pillar, and abutting each other, support the weight of nine bricks, or a fourth part of the pier of 36 in. in height.

The Gothic arches, when placed under such circumstances as the above, but with the pillar 48 in. high, carry the balancing pier of diagram *fig.* 149., which is composed of twelve bricks; and with a solid pier they carry the weight of twenty-four bricks, or half of the whole pier.



Experiments to show the Laws of the Pressure of Roofs on Walls. — The walls, or piers, represented in the diagrams *figs.* 160. and 161. are composed of wooden bricks, 2 in. wide by 4 in. long; and the roofs are boards, from half an inch to 2 in. in thickness, that rest upon the whole length of the bricks, which is 4 in. The walls are built up to the height on which the roofs, according to their thickness, will balance. The following are the results of the different experiments : —

Experiments.	Balances on the Wall.	Height of Wall, and Observations.
<i>Roof 20 in. long and $\frac{1}{2}$ in. thick.</i>		
No. 1	Balances inside at <i>a</i> .	20 in. high.
2	middle at <i>b</i> .	11
3	outside at <i>c</i> .	2
<i>Roof 20 in. long and 1 in. thick.</i>		
4	Balances inside at <i>a</i> .	20 in. high.
5	middle at <i>b</i> .	10
6	outside at <i>c</i> .	2
<i>Roof 20 in. long and 2 in. thick.</i>		
7	Balances inside at <i>a</i> .	Forced the wall inwards.
8	middle at <i>b</i> .	10 in. high.
9	outside at <i>c</i> .	1

Experiments.	Balances on the Wall.	Height of Wall, and Observations.
<i>Roof 10 in. long and $\frac{1}{2}$ in. thick.</i>		
10	Balances inside at <i>a.</i>	13 in. high.
11	middle at <i>b.</i>	8
12	outside at <i>c.</i>	...
<i>Roof 10 in. long and 1 in. thick.</i>		
13	Balances inside at <i>a.</i>	9 in. high.
14	middle at <i>b.</i>	4
<i>Roof $7\frac{1}{2}$ in. long and $\frac{1}{2}$ in. thick.</i>		
15	Balances inside at <i>a.</i>	9 in. high.
16	middle at <i>b.</i>	4
<i>Roof $7\frac{1}{2}$ in. long and 1 in. thick.</i>		
17	Balances inside at <i>a.</i>	7 in. high.
18	middle at <i>b.</i>	3

From the above experiments it appears, that the weight of a roof is of less consequence than the place of its bearing, and its pitch, or angle of elevation.

ART. IV. *Perspective investigated.* By ARTHUR PARSEY, Esq., Author of "Perspective Rectified," "The Art of Miniature-Painting," &c.

HAVING laid before the public my conception of what constitutes the, and the only, principles of perspective (for fresh authors cannot invent new principles for nature), I have been enquiring into the origin of the opinions of those luminaries of the art, who have hitherto directed the judgment of society on this subject.

In Vol. II. No. 21., and some previous Numbers, I observe a controversy between J. R. and Mr. Sopwith; the latter gentleman being supported in his opinions by no less an individual than Mr. Peter Nicholson, who has favoured the public with an article on Projection, "To make the subject clear to the understanding of the reader, and to prevent the dissemination of *wrong* principles." As the points in dispute materially affect the principles which I have published, I am induced to offer some observations on them; being myself perfectly indifferent to the individuals who advocate the adverse theories, and only interested in arriving at just conclusions. That we may rightly under-

stand what we are about, and may not proceed "on wrong principles," we must conclude that, as nature gives us only ocular perspective (for nothing is seen but in perspective), every other sort of projection can conform to no natural laws, although we must admit them to be useful devices of ingenious minds. This distinction is highly necessary to be pointed out to persons who do not investigate for themselves; and is even essential to the scientific man, in giving accurate definitions to the systems of the art. Mr. Nicholson says (p. 478.), "Every kind of projection may be well elucidated by the doctrine of shadows; by placing a wire frame, paneled with glass, representing the external form of the object, between the luminary and plane of projection."

Ocular perspective projection may be explained this way; but no other system of projection can, as it would require as many luminaries as there may be angular points in the objects, to produce parallel projection, or as many eyes to view them. Mr. Nicholson remarks, "If the object be exposed to the rays of a luminous point, which the flame of a lighted candle may be supposed to be, we may have every possible linear perspective projection of the object, more or less agreeable, accordingly as the luminous point is more or less remote, or as the plane of projection is perpendicular or inclined to the middle ray. In like manner, if the paneled frame be exposed to the solar rays, from the distance of the luminary, they may be considered as parallel: we shall then have every possible kind of projection made by a system of parallel rays, more or less agreeable, as the plane of projection is perpendicular, or inclined to the rays."

In the first place, it seems wrong in principle to say that the rays from the flame of a candle are projected on a different principle to those from the solar point. In the latter case, the vertical altitude of the rays is greater than those from the flame; each, however, diverging geometrically, according to the distance of the luminaries: it is plain, then, that we do not obtain parallel and isometrical projection by this evidence. In truth, the perspective plane of projection of an object, and the plane of shadows, are never the same. The perspective planes of objects are always between the objects and the eye, touching the nearest point; while the receiving plane of a projected shadow is always beyond the object, and may be there on any plane. Again, objects project shadows *from* a point; in perspective, objects project their appearances *to* a point, in the eye: hence, the usual mode of describing the planes of projection, and confusing the ideas of vision with ingenious contrivances, are far from making the art "clear to the understanding." In fact, all systems of projection, besides ocular perspective, should be taught mathematically; while true perspective ought to be dis-

tinctly treated by its optical principles, founded on the physiology of vision : which subject I propose explaining in a future article. Continuing the popular mode of explanation, Mr. Nicholson says, " Many of the projections of straight lines will be greater than their original (!); Anamorphoses belong to this species of projection ; and we cannot say, *in any case*, however monstrous or distorted, that the perspective is false, if the picture is drawn by the proper rules ; for, if such a picture be viewed opposite to the foot of the perpendicular from the eye, at a distance equal to the perpendicular of the pyramid, the image will be perfectly natural." Draw St. Paul's cathedral, as here described, and draw it by the " proper rules ;" publicly exhibit it ; and how many of the multitude of common sense will pronounce the " monstrous and distorted " projection to be " perfectly natural ? "

There can be but *one* true perspective representation of an object from a given point of view : neither can any of the lines be greater than the originals, as J. R. has justly said, notwithstanding the encomium passed by Mr. Nicholson on Mr. Bradley, as an author who is " too transcendently acquainted with the principles of mathematics to commit a falsehood." Mr. Nicholson adds, " Those, however, who maintain that a projection is false because some of the lines are greater than their originals, maintain a falsehood, as has been made evident." Let me ask any transcendental mathematician whether all the parts are greater than the whole, and whether that popular axiom is a falsehood ? Can a man of six feet high be put in a position to appear more than that length ? His shadow from the setting sun may be greater than the originating object, much greater ; but would any one offer a delineation of his shadow as his representation ? The practical utility of isometrical and parallel projection, if limited to rational rules, no one will question ; but it is absurd to attempt to establish them on the principles of perspective : and it is extremely prejudicial to one of the finest sources of general knowledge, to mystify the simple and instructive theory of perfect perspective, by mixing it up with irrelevant methods.

The article in Vol. II. p. 211., on perspective, by J. R., as far as it applies to the principles of the art, is beyond controversy. He says, can " three sides of a right-angled prism, orthographically represented, be seen in the projection, if one side is represented as a true square, or as a right-angled parallelogram ? " Mr. Sopwith argues, that " Parallel projection exhibits one face of a cube geometrically ; and this face may either be shown alone, as in common ground plans and elevations ; or with one or two of the adjoining faces, as may best suit the object of the designer." This latter opinion, like that

of Mr. Nicholson, makes projection any thing; and any "monstrous or distorted" delineation equally as proper as those produced by the "proper rules" founded on principle.

J. R.'s questions are fraught with importance; while Mr. Sopwith's reply, and Mr. P. Nicholson's powerful denunciation, demand a public refutation; for in them the public are told that their opinions are supported by the Society for the Diffusion of Useful Knowledge, the learned Dr. Brook Taylor, Bishop Horsley, Professor Farish (?), &c.

To proceed purely mathematically in this investigation. The first author of the definitions of geometry, exercising the faculties of sense and reason, must have derived them from the forms of nature, as they appear to the mind's eye, and not from the abstract idea of form only. The forms of nature external to our minds are the only sources of ideas. Thus, a square, offered to the eye as a centre, gives the idea of a superficies forming the base of a pyramid; the vertex of which is in the eye, and the four triangular sides are rays that connect the mind with the object. These associations generated in the enquiring mind problems, theorems, axioms, &c.; all which are stripped of their rationality when they are taken only in the abstract, unassociated with natural phenomena, which is contrary to the spirit of mathematics. The line of an object may form with the eye an equilateral, an isosceles, an oblique, an obtuse, or a right-angled triangle, for mathematical reasoning; but a form that, in the abstract, is one of these shapes, is only positively so; and that beautiful train of reasoning, which is the ultimate object of the student of geometry, trigonometry, and mathematics, is not to discover the angles and proportions of mere lines, but those mathematical creations in the mind which the moving phenomena of nature make it necessary for us, as rational beings, to comprehend. If mathematics be taken only in the abstract, this utility would be serviceable solely to the mechanic, to enable him to shape materials. But to return to the question of J. R.

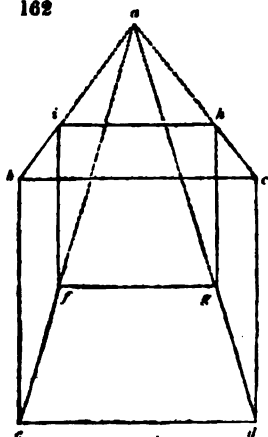
If the eye be placed opposite to the centre of a square, it is seen as a square having four right angles; if the eye be moved in any direction out of that point, more or less, *it cannot be seen as a square*; and the rays, instead of forming the four equal pyramidal triangles, will produce one or two isosceles, with two or three obtuse-angled triangles, or all four obtuse-angled triangles, according to the place of the vertex or eye: in the abstract, the base of all of them, or the projecting plane will be a square, although the pyramidal forms continually change. Will any truly mathematical mind say that the square is not seen to follow the *changes* of the pyramidal rays; or that, on any points the eye may be conceived to rest as vertices, each pyramidal base has more than one optical base, to which mathemati-

cal sections will be like and in proportion, the same as such sections are to the square, when the eye is the vertex of a pyramid? Now, with respect to the cube, as soon as the vertical point of view passes the plane of one side, and a second side enters the sight, the decrease of the side first seen continues, while the second increases; and, when the eye is over the centre of the edge, and in the plane of the diagonal of the cube, both sides will appear equal trapezoids. In no case can the edge appear greater than its dimensions, or the width of the united trapezoids greater than the diagonal of the cube. In isometrical, or orthographical, projection, nothing can justify any excess of the real dimensions, as shown by J. R. in the article alluded to; and, in perspectronometry (formerly called linear perspective), the projection can never equal the original dimensions, except in geometrical projection, as I distinguish it from perspective projection in my treatise. Mr. Sopwith says (II. p. 521.) that all those who answer the query at the head of his (J. R.'s) paper in the affirmative (? negative) are blockheads! Without knowing J. R. had been guilty of telling the *truth*, I published my original method of projecting objects in perspective, without the use of vanishing points; that method explaining what the principles of perspective have not been made by former writers. I am now proud to acknowledge myself a blockhead of the class Mr. Sopwith so calls.

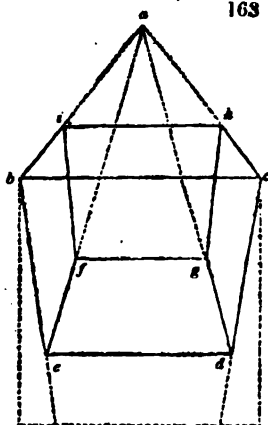
Mr. Sopwith plainly misconceives the perspective plane of projection, and the parallel plane of projection: he sees no distinction between the one lying before, and the other behind, the object, and the difference between the light emitting, and the eye receiving, the projecting rays. In the latter case, the eye *cannot* receive a distortion; in the former, the natural contour is distorted by the position of the *receiving* surface; the shadow on which is like the perspective contour, while the surface is parallel with the plane of the picture, and unlike when the surface distorts the natural appearance: in all cases, however, as has been shown, rays of light and visual rays are projected according to the "laws of nature," in pyramidal or conic form.

As I have advanced a doctrine of perspectronometry on the principles of natural vision, which is directly opposed to the opinions of Mr. P. Nicholson, Dr. Brook Taylor, and all other writers on perspective, for the sake of mathematical truth, and the diffusion of useful knowledge, I here annex two sketches (*figs.* 162. and 163.) of a cube in perspective, from the same point of station, and the same point of view over that station. *Fig.* 162. is the representation which Dr. Brook Taylor, Mr. Nicholson, Mr. Bradley, and all other distinguished and eminent professors, have pronounced to be mathematically correct; and *fig.* 163. is the representation which nature and the prin-

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163



ciples I have exemplified in my treatise, show to be the true and only optical effects. From this point of view two sides are seen ; consequently, the faces of the cube projecting pyramidal rays, with eccentric sides, as just explained, the mathematical and optical bases differ ; the former being a square, the latter a trapezoid ; and the other side projects a less trapezoid, because the angle of inclination of the middle ray is less than the angle of the middle rays to the other side ; also, the vertical angle of which the two diagonal points form the base is somewhat less than the angle of a side viewed perpendicular to the centre, or, as I term it, geometrically.

The contrast of these two figures will draw the attention of the lovers of truth to this subject ; the one being a true mathematical section, and the other a true perspective section, of the cube from a chosen point. From the point of sight *a*, the trapezoids *b, c, i, h* are identical ; but the mathematical squares *b, c, d, e*, and *i, f, g, h*, form in the eye the trapezoids *b, c, d, e*, and *i, f, g, h*, assuming that the eye is at *a*, above the plane *b c*, and its parallel plane *d e* ; by which construction *b e* and *c d* (*fig. 162.*) are reduced to *b e* and *c d* (*fig. 163.*) In order to show that the latter is mathematically, as well as optically true, turn the diagram so that *b c* forms a perpendicular, and the point of sight *a* is on a horizontal line bisecting *b c*, the cube reposing on the base *d c h g*. Have we not then the true perspective figure which would be set up, in such a case, by the existing theories, with vanishing points, and starting with the geometrical altitude of the cube *b c*, which intersects and produces the apparent perpendiculars *d e, g f*, and *h i*, and the angular lines *b e, g d, i f*, and *h g* ? It has escaped the notice of every professor of the art, that the change of delineating, or the nominal position,

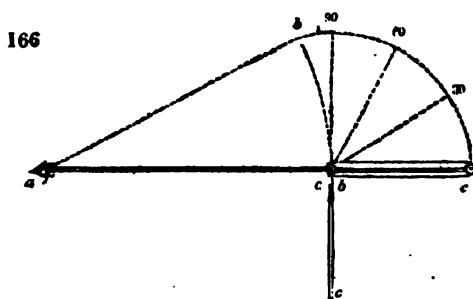
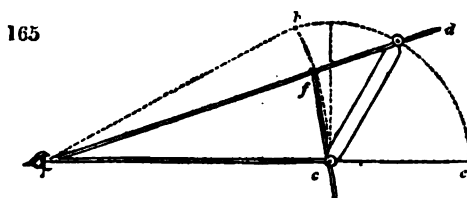
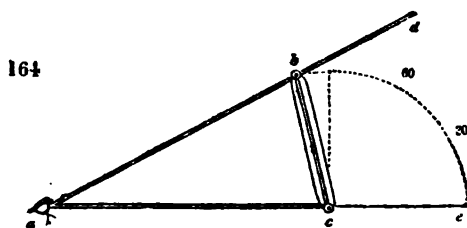
makes no change in the relative positions of the objects and points of view, and, consequently, no change in the effect: yet, simply from having to describe the object from above, instead of horizontally and midway, the truth has been distorted, and a mathematical section of the rays substituted.

I have explained, in my work, the difference of the optical effect from a single object, from that of two or more in connexion with the eye. In one case, this mathematical figure becomes the optical figure. Of this first published truth must follow an examination of my method of producing objects without the use of vanishing points, the importance of which is, as yet, but little known.

The principles, or, rather, I should call them *methods*, by which *fig. 162.* is projected universally pass for truths, mathematical truths! and are propagated by all the talent of the Society for the Diffusion of *Useful Knowledge*. Lovers of the fine arts look to this matter, and let every "transcendental" mathematician withdraw his name from among the advocates of mathematical misapplication. A plate of the "perspectronometer" (an instrument I have invented to render the principles of vision manifest to those persons who are unacquainted with geometry) will go far to establish the truth of my observations, and the necessity of substituting the principles I set forth for those that have hitherto passed current.

In the note I send herewith you will see that Mr. Etty, R.A., speaking of this instrument, says, "It very clearly and satisfactorily elucidates the principles of perspective."

Description of the Perspectronometer.—*Fig. 164.* is the instrument; $a b$ and $a c$ are brass rods of equal lengths; $b d$, a steel rod produced from b ; $b c$, dotted, another steel bar, equal to $b d$, screwed into b , and just entering the cock at c . Under the steel bar $b c$, lies a slip of brass of the same length, working on a centre at c , and having a cock fixed at the end b , through which the steel rod $b d$ traverses. A line ($c e$) is produced to e ; $c e$ being equal to $b c$: the arc $b e$ is described with the radius $c e$, and another arc is described between b and c , with the radius $a b$ or $a c$. On moving the cock b along the steel bar $b d$, until it is perpendicularly over c , the line $a b$ descends, the angle decreases, and the steel bar $b c$ is projected a small piece through the cock at c . On moving the cock b , until the brass slip $b c$ forms an obtuse angle of 120° with $a c$, a greater quantity of the steel bar is projected through the cock c (as shown in *fig. 165.*); and, on bringing the cock to e (as in *fig. 166.*), the whole of the steel bar $b c$ is projected through c , and the two lines $a b$ and $a c$ fall on each other, making a line with $c e$. Now, let a be an eye, $a b$ and $a c$ rays of equal length projected from the object $b c$: it is evident $b c$ cannot subtend a ,



greater angle, and the object and the rays will form an isosceles triangle (as in *fig. 164.*). Let the eye retain its position at *a*, and let the ray *ac* also remain in its present position; then place the object *bc* perpendicularly to the ray *ac*; the point *a*, in the ray to *b*, will rest on the arc *bc*, and the object *bc* will subtend a less angle than when placed as in *fig. 164.* Move the cock *b*, so that *ac* and *bc* form an angle of 120° (as in *fig. 165.*); then *bc* becomes $fc = bc - bf$; the point projected through the cock being equal to *bf*. Move the cock *b* to *e* (as in *fig. 166.*); then *bc* becomes *ce*, and *ab* and *ac* become *ae*, in one straight line, and the length *bc* becomes $bc - bc = \text{nothing}$.

Hence, it is evident, as the line or object $b c$ subtends the greatest angle when it forms the base of an isosceles triangle with the rays $a b$ and $a c$, it is seen of its geometrical length, and the axis of vision is equal to the altitude of the triangle: also, as, when the same line forms a right angle with the rays, it does not subtend so great an angle, and the axis of vision is not the altitude, consequently, it cannot appear so great as when it subtended a greater angle; for, according to the true elucidation of vision, the mind is not susceptible of the unequal extension of rays, but the object is projected through a plane which equalises them; and that plane is always the chord of an arc described by a radius equal to the shorter ray from the extremes of a line. With a line only, the rays to the extremes form a triangle; with many lines, as in one or more objects, the rays form conic or pyramidal rays; in which case, the plane of optical projection follows the same simple law vertically and horizontally; the vertical line of projection and the horizontal line of projection being the transverse direction of the plane of projection, always touching the nearest point or surface of the objects viewed.

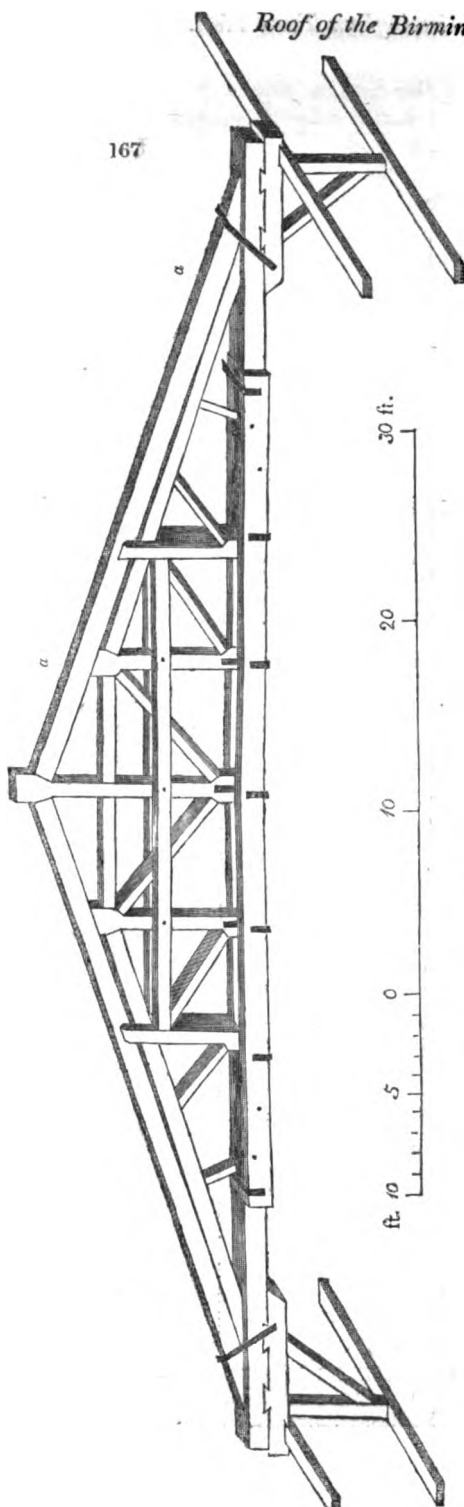
This vertical line of projection forms a new and important feature in my art of "perspectronometry," which is a fitter name for the art than perspective; for it signifies the science of measuring the apparent lengths of mathematical lines. We never see a form! we only see forms in appearance. An object has but one form; and, when seen or represented from a given point, we see or represent only one peculiar appearance of those parts which are visible to the eye, inferring by our previous knowledge what constitute the unseen parts; so that, in speaking of seeing a form, according to popular conception, there is an universal error. In reality, by natural inference, I should say we only see the forms of appearances; which forms are the legitimate features for perspective to portray with accuracy.

The gentlemen whose names I have mentioned will, I trust, acquit me of any personal motives in doing so, and attribute it to my desire to see the art I profess not only established on demonstrable optical principles, but to see it become the study of every well-educated man, forming, as it does, the elementary science of general and useful knowledge.

Strand, London, July 23, 1836.

ART. V. *On the Roof of the Birmingham Town Hall.* By WM. KENDALL, Esq., Kineton.

A GOOD deal of discussion having taken place respecting the Birmingham Town Hall roof, and more especially in conse-



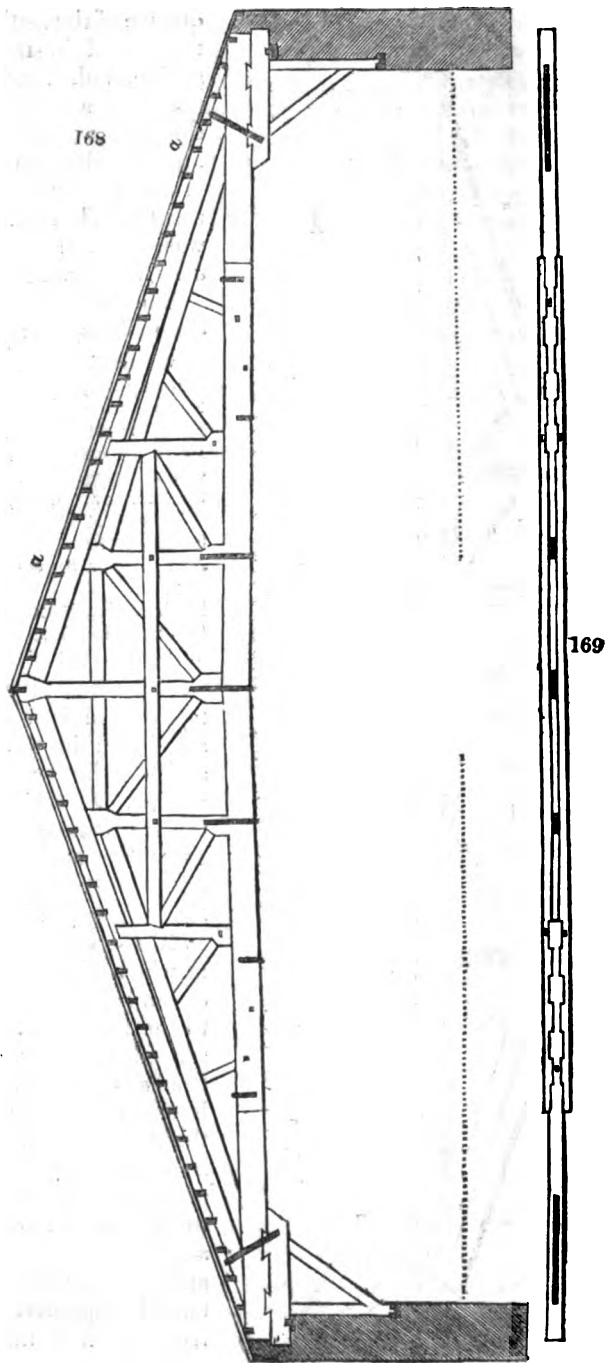
quence of the settlement mentioned in this Magazine, Vol. I. p. 380., I presume a drawing of the truss will not prove unacceptable to your readers. The settlement which took place was between the points *a a*. (See *fig.* 168.)

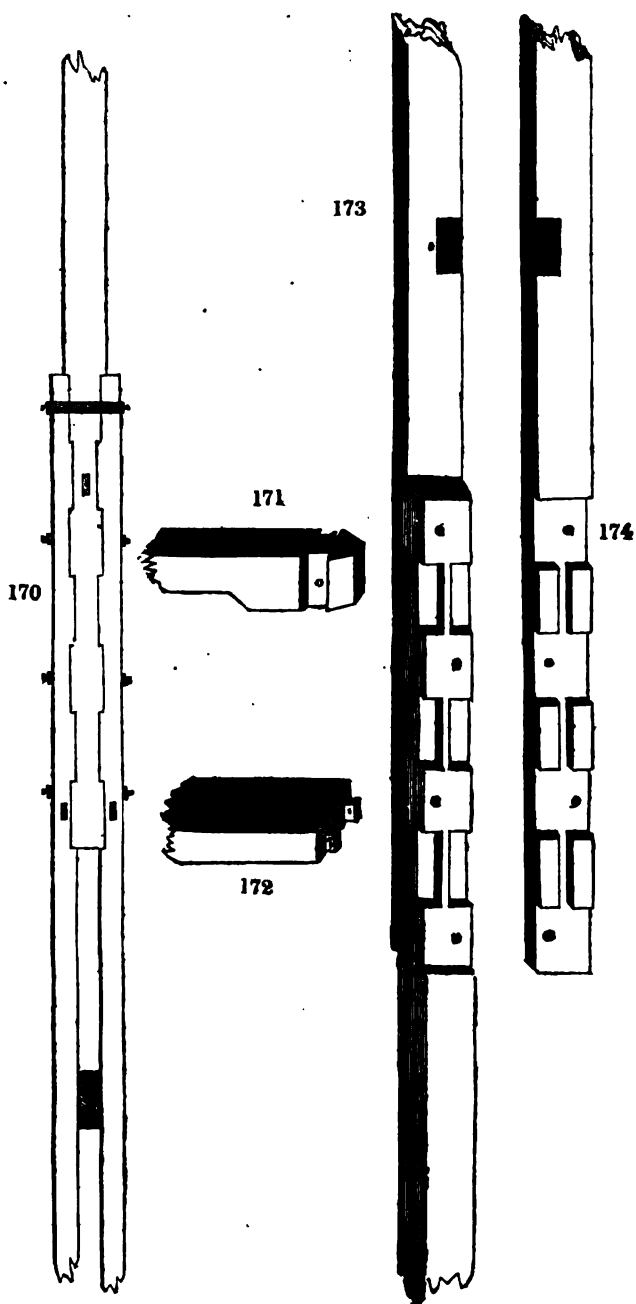
The following are the dimensions, viz:—

King post, $15 \times 9 \times 6$
 Queen posts, $14 \times 8 \times 6$
 Second queen posts, 14×9
 Principal rafters, 11×6
 Discharge rafters, 9×6
 Collar beam, 8×6
 Second, or lower, collar beam, $8 \times 4\frac{1}{2}$
 Struts, 6×6
 Jack beams to corbels, 14×10
 Posts to do., 10×7
 Struts to do., 7×7
 Wall-plates, 9×6

The tie-beam is scarfed together in four pieces, as shown in *fig.* 166., and to a larger scale in *fig.* 170. *Figs.* 171, 172., the two end pieces, are 14×10 ; and the two middle pieces are $14 \times 5\frac{1}{2}$. *Figs.* 173. and 174. show the method in which the king and queen posts are secured to the tie-beams. The second, or lower, collar beams, of which there is one on each side of the truss, and abutting into the second queen posts, are notched on to the kings, queens, and struts half an inch; and they are all firmly bolted together. The trusses, ten in number,

F F 4





are 12 ft. apart; except the two end trusses, which are 14 ft. from the outer walls. Joists, $7 \times 2\frac{1}{2}$, and 15 in. apart, notched on to the trusses (see *fig.* 168.), run the whole length of the building; these laid with inch boarding, and the whole covered with 7 lb lead. The whole of the timber used is good sound Baltic; except the king posts and queen posts, which are of good sound English oak. The span is 65 ft. 6 in. in the clear. *Fig.* 167. is the truss in isometrical perspective, and will convey a clearer idea of its construction.

I, having been a party concerned in the execution of this roof, refrain from all comment as to the soundness of the principle upon which it is constructed, or of its suitability or unsuitableness for the Birmingham Town Hall.

It was designed by Mr. Joseph Hansom, one of the architects of the building; and he thinks (or did think, at the time the roof was framed) so highly of it, as to imagine that nothing in the way of carpentry has appeared equal to it in modern times. This opinion I leave entirely to the judgment of the readers of this Magazine.

MISCELLANEOUS INTELLIGENCE.

ART. I. Domestic Notices.

ENGLAND.

HOUSE of Commons, and the New Houses of Parliament. — It does not often happen that any matter immediately, or even remotely, connected with architecture forms a topic of parliamentary discussion; but the debate on Mr. Hume's motion (July 21.) relative to the intended new Houses of Parliament was one of particular interest in itself. Although the member for Middlesex did not carry his point, which was nothing less than to set aside the whole of the previous proceedings, and begin *de novo*, and, consequently, the business remains substantially where it was, the discussion was by no means a fruitless one, since it afforded several members an opportunity of vindicating the commissioners from the obloquy cast upon them, both on account of presumed incompetence for their office, and unfairness in the discharge of it. Those who have seen the exhibited drawings must allow that the commissioners' task was one of considerable labour, and that they acquitted themselves of it very satisfactorily; since, with the exception of some few, though noisy, malecontents, the public have confirmed their sentence as far as regards Mr. Barry's design; and by the public I mean those who are capable of judging of its general merits, although they may not be exactly competent to enter into a formal architectural analysis of it. So far the excellence of Mr. Barry's design may be allowed to be of a superior kind; for, as a glance at most of our modern buildings will convince us, it is easier to meet with such as are technically not objectionable, than with any which captivate the critical observer by any qualities as works of art.

After being subjected to a more rigorous ordeal than any of the others, because far more minutely and invidiously scrutinised by those who were eager to detect and drag forward every fault, however trifling, Mr. Barry's design has infinitely more to recommend it than any of the others, against the majority of which nothing has been specifically objected, for the reason that they

do not present any thing so strikingly good as to render it worth while to examine them, for the purpose of noting separately all their recommendations and deficiencies; otherwise they would, probably, have been found to possess as many, or more, errors; errors, too, still more objectionable than those imputed to Mr. Barry's, without any of its redeeming qualities.

Some have made it ground of complaint, that Mr. Barry should be allowed to deviate from his original drawings, for the purpose of introducing alterations and improvements; which they consider a species of unfairness: so it undoubtedly would be, had the prize been awarded to him for a design of doubtful merit, and only then entitled to it after being tampered with, in order to fit it for public inspection, and justify the preference given it. The original design having been exhibited, the case is otherwise: the public are satisfied that the preference was a just one. Although the design is the best, it would, as Sir Robert Peel observed, be absurd, on that account, to prevent the architect from improving it, and giving to his first ideas all the perfection he is able. Undoubtedly, any of the other architects would now (especially after what he must have learnt from studying the designs of his fellow-competitors) be capable of greatly improving his also, had he first won the opportunity of doing so. Falling in that primary object, no architect can justly complain that he has also missed the privileges annexed to it.

So far is it from being desirable that an architect should be bound down to adhere to his first design for a building, which can rarely be maturely studied throughout, that much which is defective in our public buildings may safely be attributed to the neglect of careful revision. Though the general idea, and many of the parts, may be good, much may require to be retouched and polished up, so as to produce a finished work.

Sir Robert Peel's testimony in favour of the commissioners and Mr. Barry is not at all weakened by his declaring that he was originally opposed to a public competition, thinking that government ought to have chosen their own architect, and that by so doing they would be more likely to secure a plan that would reflect credit on the nation. "An eminent architect," he said, "had devoted his time for several months to the preparation of a plan; but it was thought proper that there should be a competition." From this we may infer, that that "eminent architect," whoever he was (and it is not difficult to guess at him), did not care to encounter the risk of a defeat, although he would have had the advantage over his rivals as to time, having the start of them by several months; and yet, a person who so mistrusted himself as to be discouraged from entering into any contest with others, was a fit person to have been entrusted by government with designing and executing an architectural work of such importance! This is rather odd argument; and it may be assumed that the design alluded to by Sir Robert Peel has no extraordinary merit to boast of, otherwise its author would, doubtless, have adopted some mode of bringing it before the public, and so showing the world what a piece of excellence the unfortunate system of competition had deprived it of.—*L.*
July 23.

Mr. Peter Thompson's Model of his Design for the New Houses of Parliament.
— Our readers will bear in mind the review of Mr. Thompson's publication, p. 178, and Mr. Thompson's remarks on that review, p. 284. We may also state that, soon after the appearance of Mr. Thompson's book, a review of it appeared in the *Times* newspaper; apparently written with a view to discourage carpenters or builders, like Mr. Thompson, from attempting to infringe on the province of the architect. The extreme severity, coarseness, and bad feeling displayed in this review, as is usual in similar cases, defeated its own purpose; and, instead of injuring Mr. Thompson, it has, in fact, been of the greatest service to him. A weak-minded man might have suffered from it, or, perhaps, sunk under it; but Mr. Thompson is a man naturally of a very strong mind, of indefatigable industry, and of undaunted mental courage. The first effect which the review in the *Times* had on him was, to determine him to construct a model. After the model was finished, Mr. Thompson

took it down to Windsor, and had the honour and satisfaction of showing it to their Majesties and the royal family. This took place on July 4. ; and Mr. Thompson kindly invited us to see it on the 5th instant. Another effect of the review in the *Times* was, to attract the attention of some gentlemen connected with a new colony ; in consequence of which Mr. Thompson has received a large order for portable wooden dwelling-houses, 41 of which he has already shipped, and with the remainder of which (besides a banking-house of two stories high, and a portable church, for the same colony, 80 ft. long, 45 ft. wide, and 40 ft. high to the top of the spire) he is employed literally night and day.

The model is beautifully executed ; and, as explained by Mr. Thompson, shows a great deal of contrivance and arrangement in the interior ; though we cannot say that we were more pleased with the elevation in it, than we were with it in the engravings. We strongly recommend all our readers, who have an opportunity, to call and see it ; if only for the sake of becoming acquainted with Mr. Thompson, and learning from his conversation how much may be done by a man, having no adventitious advantages of education or fortune, in improving his mind, and also his worldly circumstances. The model is exhibited gratis in Mr. Thompson's shop, which is in Osnaburgh Place, New Road, near Fitzroy Square, exactly opposite Mr. Austin's Artificial Stone Manufactory, a museum of architectural sculpture also well worth seeing.

Mr. Thompson has infringed on the booksellers, as well as on the architects ; for he has established in the portico, or entrance-hall, to his manufactory, a bookseller's shop, well stored with old and new books, and containing stationery and architectural prints for sale. Mr. Thompson was led to this by endeavouring to collect for himself a good library of architectural works ; to enable him to do which, he bought up books of every kind, wherever he could find them a decided bargain ; and afterwards exchanged them for the books he wanted, as opportunity offered. Finding the purchase and sale of books by retail, for ready money, attended with very little trouble, and that it could be managed by one of his family, he continued it ; and, as he is an advocate for lowering the price of books, and more especially architectural books, some of our readers may find it worth their while to call on him as a bookseller. Others, who have houses to build, or carpenter's work to perform, will, if we are not very greatly mistaken, find him a treasure in either of these capacities.

The Close of the Exhibition of the Designs for the New Houses of Parliament took place on July 23. The sum collected was somewhat above 1500*l.*, and the expenses above 500*l.* ; thus leaving about 10*l.* to each exhibiter. Before the exhibition was closed, the exhibitors had a meeting, at which letters were read from Edinburgh, Birmingham, and some other considerable towns, requesting that the designs might be exhibited at those places ; and it was resolved that, as far as depended on the meeting, the designs should be sent to Edinburgh for the purpose of exhibition. Two lithographic prints, showing the original and altered plans of Mr. Barry, were exhibited ; which, together with several pamphlets, either published, or to be so, will be noticed in a future Number.

New Churches.—Fifty new churches or chapels are in contemplation, to be erected in the most populous parts of the metropolis and its suburbs. The Bishop of London is at the head of the project ; and subscriptions for carrying it into execution are going on in various parts of the country ; upwards of 50,000*l.* having been already collected. Government is expected to aid the undertaking ; and I have little doubt that many new churches and chapels will be erected ; but I hope an open and fairly conducted competition will be resorted to, and that in no one instance will a favourite be called in. Churches are public buildings, and, therefore, ought to be competed for.—*Tyro.*
Wilmington Square.

London University.—A handsome statue of Locke, executed in marble by R. Westmacott, R.A., has just been completed, and placed in the vestibule of the London University.—*Id.*

SCOTLAND.

Churchyard Architecture.—Every one who has visited the ancient burying-grounds within and about Edinburgh must have observed the total absence of every thing like method in laying out the grounds, and the almost equal absence of harmony between contiguous monumental edifices. Of late years, a new spirit seems to have sprung up in the neighbourhood. A considerable addition was made, some time ago, to the West Churchyard, which, situated as the addition is, close by the Castle Rock, and adjoining the Prince's Street Gardens, to the height of 20 ft., has a fine effect, particularly as it is laid out after a regular plan. The tombs are all built, and, as a striking instance of the previous want of churchyard accommodation, nearly one third of these tombs are already taken up, although it is but four years since this new ground was first opened. This cemetery, besides its other advantages, is in so secluded a situation, that the monuments erected in it are not subject to be soiled and tarnished by smoke. (*The Scotsman*, January 27. 1836.)

Bread-cutting Machine.—This is a newly invented machine for cutting loaf bread, the credit of which is due to Mr. Blaikie, an ingenious gun-maker in Glasgow. In its machinery it is quite plain and simple; and nothing could well be more easy and satisfactory than its operation. The loaf being placed in the proper receptacle, the operator raises the handle of the machine; when, by a simultaneous motion of the internal machinery, the loaf is shifted forward to the proper place, the size of the slices having been previously determined by fixing the index hand of the regulator at the desired distance. The handle being then brought down, the slice falls into a box beneath. A quarter loaf may be cut in this manner in half a minute; and cut, too, as smooth and even almost as polished marble, and without breaking it into crumbs, as is unavoidably the case by cutting bread in the ordinary way. (*Id.*)

ART. II. *Retrospective Criticism.*

ERRATUM. In page 357. column 3., for "11½ lb.," read "11¼ lb."

The New Houses of Parliament.—Until the publication of your last Number I was an advocate for the new Parliament Houses being built on the old site; but the masterly reasoning of Mr. Fowler, so ably seconded by Mr. Rainy, has quite changed my opinion on this question; and, although I should prefer the Gothic style for such a building, yet I think the government did quite wrong in not allowing architects to send in designs to their own taste, and to select their own situations too. Many valuable hints would most certainly have been the consequence. — *W. Kendall. Kington, July 8. 1836.*

Perspective Rectified.—The concurring testimony of J. R. to the novelty, as well as to the merits, of my treatise on perspective, is gratifying to my feelings, desirous as I am of advancing the literature of art. The cultivation of the definite and real principles of rectilinear and curvilinear perspective will rectify the minor details of the art, for which there are many long standing and excellent rules. The line of projection, which, in my work, I have termed the line of contact (because the plane of projection is always in contact with the object), as J. R. justly says in his review (iii. p. 274.), "ought to be exhibited to the learner in the most prominent manner."

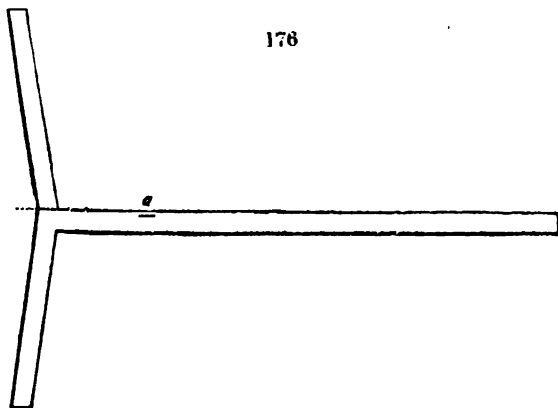
I beg to point out an error which your engraver has inadvertently made in misplacing this line in the plate copied from my work (fig. 117. p. 273.). By substituting the accompanying cut (fig. 175.) for the incorrect one in question, you will oblige me, as the adjustment of the line of projection has been capricious, and is one of my leading points of rectification. In the figure, A B C D is the ground plan of a cube; e, the point of station; f, g, the visual

with the horizontal line of projection, makes the plane of projection easy of comprehension, and practically true.

Many authors, in brief sentences, have defined perspective, yet not one has been consistent in making the theory and practice agree with those occasional gleams of truth. That influential authority, Mr. Peter Nicholson (ii. p. 479.), says, "In perspective projection, the system of rays forms a pyramid, the picture being the base, the point of sight the vertex, and the perpendicular from the point of sight to the base the distance of the eye from the picture;" yet, in the same article from which this sentence is extracted, he wavers from this optical truism. Throughout the perspective works, without exception, all authors have substituted a misapplication of mathematics for optical demonstration; which has ever rendered perspective abstruse, unintelligible, and impracticable. — *A. Parsey. London, July, 1836.*

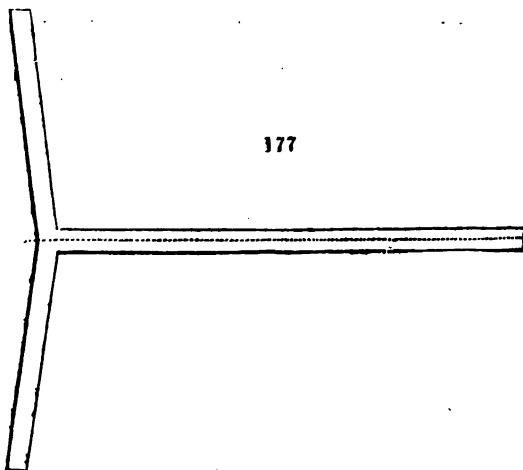
Review of "Parsey's Perspective Rectified." — I was struck with your notice, in the *Architectural Magazine*, p. 270., of Mr. Parsey's proposed method of drawing objects in perspective without the aid of vanishing points; it being precisely the same as occurred to myself, and was put in practice more than seven years ago. It does not, however, with me supersede the use of that excellent instrument, the centrolinead; but merely takes place of the more common and complicated process of finding the vanishing lines to which the centrolineads are to be adjusted. I use the original plate and screw instruments; but Mr. Nicholson has long since simplified this invention; although, as far as I am aware, he still places one edge of the ruler so as, if produced in that direction, it would meet the angle formed by the two arms at the back, as in the annexed diagram (*fig. 176.*); whereas the instruments are better

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constructed, and equally efficient, by placing the ruler centrally, as in *fig. 177.* Indeed, if otherwise convenient, it matters not precisely where the ruler is placed; as, provided it bears the same relation to the arms in all positions of the instrument, it must describe equally correct radii; so that, instead of its use being confined to the right or the left hand, according to the position of the ruler's edge (*a*, *fig. 176.*), which, however, is not necessary with any, it may be used indifferently. Further, by adding another pin, as circumstances may require, the same instrument may be adjusted to two very different degrees of converging lines; and, therefore, be made to serve for the right and left at the same time.

I have no doubt whatever of the merits of the work above mentioned: but I have long since thought that much more has been written on the subject of perspective than is useful; for, if the principle be once understood, no proposition can occur in its practice that will not, by a thinking person, be easily solved; and I do believe that one or two lectures, aided by models, as well

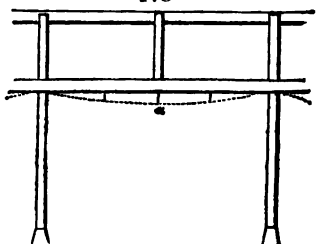


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as diagrams, would be more effectual in putting any one in possession of that principle, than all the voluminous works that have been published on the subject.—*E. W. Gribble. Torquay, Devon, June 8. 1836.*

ART. III. *Queries and Answers.*

ISLE of Dogs.—On passing up the river, the other day, in a steam-boat, I observed that, nearly opposite Greenwich, some sheds are being erected, in which an iron chain (*fig. 178. a*) is introduced in a novel manner; by which means one story post in every three is omitted, giving, consequently, double the width between them; which, in many cases, is very desirable. By noticing this circumstance, perhaps some of your correspondents in that neighbourhood will be induced to view these sheds, and give a more detailed description of them; or, perhaps, the architect would send the necessary information, and give his reasons for using the chains?—*W. S.*



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tion of them; or, perhaps, the architect would send the necessary information, and give his reasons for using the chains?—*W. S.*

Captain Wildey's new Stuffing for Mattresses, &c.—Having read a good deal respecting this material in the *Brighton Gazette*, at different periods, I should feel much obliged to you, or to any of your readers, if you could tell me what the material is.—*John Brown. Fore Street, Brighton, July, 1836.* A correspondent and contributor to the *Encyc. of Cott. Arch.*, to whom we sent this query, has returned us an answer, containing details too long for insertion here, but which we shall give in our next Number. In the mean time, we may state, for Mr. Brown's information, that Captain Wildey's substitute for horsehair, straw, flock, cotton, *Alga marina*, and various other substances in general use for bedding, mattresses, pillows, chairs, sofas, carriage seats, &c., is the fibrous coating of the cocoa nut, which has already been long in use for the same and other purposes in the East Indies and China. It appears to us a very excellent material for the uses to which it is to be applied, and we would strongly recommend it to the attention of upholsterers, and all persons engaged in providing cheap and durable stuffing for bedding, sofas, chairs, &c.

THE
ARCHITECTURAL MAGAZINE.

OCTOBER, 1836.

ORIGINAL COMMUNICATIONS.

ART. I. *On Order in Architecture.* Translated from the French of
M. QUATREMÈRE DE QUINCY. By P.

THE word *Order*, in architecture, has a general acceptation, which does not require any definition ; because all its synonymes, such as arrangement, disposition, &c., do not convey any clearer idea. Order is, in fact, one of those primary ideas which carry their explanation with them, and which serve to explain other words, rather than require any other words to explain them ; thus there are few words in more general use.

Applied to architecture, then, this word signifies generally what it does when applied to the works of nature, and to all the other productions of man ; namely, a certain disposition of parts so as to form a whole, and a certain connexion among themselves, and with that which shows a presiding intelligence, and proves that they are not the productions of chance. Chance cannot produce any order ; that is, it cannot produce such a state of things as will prove the existence of a previous and lasting connexion between them. Thus, combinations of things produced by chance can never happen, or succeed each other, twice in exactly the same manner ; and it is the contrary effect, that is, the perpetual and regular recurrence of the same results arising from the same causes, that convinces human reason of the existence of a Supreme Power or Intelligence, which rules and directs the immutable and admirable system of order which pervades the universe.

The works of men approach the nearer to those of the Author of Nature the more they bestow upon them that principle of intelligence which man alone, of all created beings, has received from God. It is by Order that this principle of intelligence is manifested ; this is, also, what we admire in the organisation of society, in the laws of nations, in the productions of genius, and in the labours of industry. It is towards the perfecting of

this order that the meditations of philosophers, the researches of the learned, and the inventions of artists, unceasingly tend.

Of all the arts, there is not one in which the existence and application of Order can be more appreciated than in architecture; when considered, not only with respect to its physical connexion with the wants of man, but, also, more particularly in those intellectual combinations which art, as an emanation of the mind, takes delight in manifesting and setting forth to the eye, so as to satisfy both the reason and the taste.

What is called Order is, therefore, a thing concerning which men have but one general opinion. We might affirm that there is a natural tendency towards it implanted in every man; but, as in many other things, all cannot bring it to perfection. Those approach nearest to it who have most carefully studied its laws in the book of nature; that book which, although open to all, is only understood by a few. This study can only be carried to a high degree of perfection among people and by men in whom the greatest and most perfect state of civilisation has developed the faculties which are required to comprehend, both in their causes and their effects, the niceties of the connexion which exists between physical objects and the operations of the mind. If we enquire what nations have applied themselves most diligently to the study of nature, we shall always find them to be precisely those among whom the imitative arts have attained the highest degree of perfection in exactness, harmony, truth, and proportion; all qualities which emanate from the general principle of Order.

Architecture being simply the art of combining parts of different kinds and proportions, according to certain rules, so as to form a whole, may, more than any other art, be judged of by the greater or less degree of order which it displays.

No doubt, in every, even the rudest, style of architecture, some principle of Order is displayed. No work of man can exist which may not be referred to some governing principle; and a certain degree of order may be traced even in the most unshapely hut or cabin of the savage. But this is not the idea which we generally attach to the word Order, which, it must be obvious, can only be properly applied to works which display this quality in a preeminent degree.

In architecture, Order, in the proper sense of the word, is that mode of arrangement which is the most complete; that is, the arrangement which displays most forcibly the operation of the mind, and which combines in the truest and most durable manner, and in the most exact proportions, each part with the whole, and the whole with each part, so as to form a perfect harmony. Many mistakes are made on the subject of proportion. The word is improperly applied to the relation one object bears to another. Every object has, undoubtedly, length

and breadth, &c.; but these simple measurements do not constitute proportion. Animals alone can be said naturally to have proportion. Thus, the size of a tree cannot be determined by the thickness of a branch; for every one knows how many chances would intervene to render this rule futile and uncertain in thus generalising its application. Animal organisation, on the contrary, in each species, is so unvaried, and the connexion between the body and every one of its members is so uniform, that one single part will show the size of the whole, and, reciprocally, a single glance at the whole will give an idea of the size of each particular part.

This is what is called proportion, and this is the image of Order. If it is impossible to deny that Order reigns preeminently in architecture, it is not difficult to perceive that there must be some kinds of architecture in which it is more strongly displayed than in others. It is also clear that this principle affords us a standard of judgment which depends neither on prejudice nor caprice.

We do not intend here to enter into a detail of all the different styles of architecture, to examine how far Order enters into the composition of each; we shall only submit two kinds to the test; viz. the Egyptian and the Gothic.

Can we discover in Egyptian architecture a principle of Order sufficiently fixed and decided to enable us to deduce from it a true system of proportions? We fear that, whatever prejudices may be entertained in favour of those of its ancient monuments which are best known at the present day, it would be vain to endeavour to attribute to them the same properties as are possessed by those of the Greeks. The extraordinary simplicity of Egyptian buildings, their constant monotony, and the spirit of routine possessed by the whole nation, which is so evidently displayed in all these works, lead us to consider that in their case the study of relative affinities, calculated to gratify the mind more than the sight, would be as useless as unlikely. We know that in Egypt a temple was necessarily subjected to laws derived from a religion that was totally opposed to all novelty. We may, therefore, easily understand that such a building could not require any particular genius in the architect; and, also, that he would not have any occasion to try to discover the cause of the effects produced by certain proportions and combinations of forms on the mind. In Egypt, grandeur and solidity were the only qualities that the religion of the country permitted the artist to express; and grandeur and solidity may exist without any system of proportions. Massive columns, massive architraves, and massive walls — these are the component parts of Egyptian architecture.

It is true that Egyptian columns and capitals are found of

varied and diversified forms ; but no one has ever discovered any connexion between the form and decoration of these capitals and those of the columns to which they belong ; neither has any relation been found to exist between them sufficiently fixed to regulate the height of the capital by that of the column. Leafy capitals, or rather chaplets, are, for instance, placed on several stages of the same column ; and these are sometimes lower, sometimes higher, sometimes slender, and sometimes thick. Some kind of proportion exists, it is true, between the height and thickness of some of the Egyptian columns ; but not more than is to be found in every building, however simple, and which the rudest principles of composition are sufficient to dictate. The Egyptians had certainly a scale of measurement ; they formed a temple or a column, as they did a statue, by the compass, and nothing more. But the compass, or the simple and mechanical use of that instrument, could never give the harmony, taste, and beauty which compose Order in its highest degree.

The narrow bounds which limited Egyptian architecture were opposed to every thing tending to establish a system of proportions sufficiently fixed to produce Order ; a result of which it is an essential property to display the mind that produced it. The Egyptian architects had general dimensions to regulate their works ; that is to say, there were certain proportions which necessity and habit had established as necessary to exist between the principal parts of their edifices ; but they had no certain guide to discover, from the whole, the relative size of each of the smallest parts.

In Egyptian architecture, therefore, excess of simplicity and uniformity was opposed to the discovery of a system of relative affinities which should be at once fixed in their principles, and yet variable in the application of them, according to the difference of characters and ideas which the art was wanted to express. In *Gothic* architecture, on the contrary, we find that the style of building on which this name has been bestowed sprang from so many heterogeneous elements, and in times of such great ignorance and confusion, that the extreme diversity of its forms, inspired by caprice alone, effectually hindered the introduction of any real system of proportion, and that the style is only expressive of an idea of disorder.

A true understanding of this matter is necessary ; for many people deceive themselves in the ideas they form concerning Order and proportion in architecture. On entering a Gothic church, they are struck by the regular disposition of its pillars and arches ; they admire the interlacings of its roof, and the lightness and boldness of its masses : but all these beauties, whatever may be their value, have nothing to do with that principle of Order which ought to constitute a style of architecture

Many things dictated by instinct alone may produce beauties in this art, and yet not have proportions in the sense which ought to be attached to the word. Ask the Gothic architect if his pillars bear a fixed relation to their different parts. The answer will be, that the pillar may have three, six, or even more times the height of its thickness; and that nothing of the sort is fixed in a determinate manner in any Gothic buildings: not even in a solitary edifice, whatever may be its dimensions. Ask if the Gothic capital corresponds in size, form, and ornament with its pillar: facts themselves will tell you, that caprice or chance alone decides its shape. Enquire if the different members and details agree with such and such a part of the arrangement; and you will be informed that no trouble has ever been taken about relative affinities which do not belong to the executive department. You will be shown the clumsiest supports by the side of the slenderest shafts; groups of little columns supporting nothing; and masses quite out of the perpendicular, without any support at all. If you wish for an account of the exteriors of the churches, none can be rendered of confused parts and incoherent details, carved out by the most ignorant caprice. The elevations of this style are never proportioned to their groundwork; and great boasting is made of their height, which only aspires to appear as an effort of mechanical skill. Gothic architecture has, therefore, no system of proportions; and it contains no principle of *Order* which will enable us to discover from each part, detail, and ornament, the reason which unites it to the whole, and to the other parts, details, and ornaments of which that whole is composed. We think it needless to show that an equal deficiency exists in Indian architecture, which is the offspring of a still more limited instinct. In it, every thing that might have constituted a style of building is destroyed by an inordinate redundancy of ornament. It would, also, be in vain to seek for any indication of the principle of *Order* in the slight structures of China; this whole nation having been, from the earliest antiquity, reduced to a system of routine.

We shall, therefore, now go on to prove that this principle of *Order*, which is not to be found in any of the above-named modes of building, is legibly written in Greek architecture; and that it is to the principle of *Order* that this kind of architecture owes its rise.

It must be remembered that Grecian architecture, as exhibited in its remains, with those developments and modifications which have rendered it applicable to all nations, had not for its origin only that instinct which every where teaches the hewing and collecting of stones; it also possessed a kind of model, consisting in itself of a combination of parts, arranged and con-

ned by reason and necessity. It therefore sprang from a pre-existing combination, of which it adopted the leading features; and hence arose its principle of Order. In Greece, the first edifices were formed of wood, which produced a combination of parts, governed by a natural and uniform connexion. This principle transferred to stone constructions a regularity of disposition, which has been always subsequently followed too exactly to admit of anything merely dictated by necessity. The only model was the spirit of Order and proportion; and this adhered to, the natural love of variety which exists in every human breast was sufficient to bring all the resources of the art in play to vary the expression: but, while following a system of proportions dictated by observing the construction of the wooden hut, architects found it necessary, in order to arrive at perfection in their art, to study the spirit that dictated the proportions observed in this construction, from a still grander model — that of nature. This, in Greece, produced a result which did not occur elsewhere; and, in proportion to the progress made by Grecian artists in imitating nature in their images of the human body, did this spirit of imitation display its influence in architecture. In thus reflecting upon the common bond of union which exists between all the arts, we perceive at once how, and why, an ignorance of the proportions of the human frame must have had its reaction upon the Egyptian, Gothic, Indian, and other styles of building; also, the reason why the architecture most distinguished for Order and fixed proportions was that of a people who, in painting, drawing, and sculpture, had carried the study of scientific proportions to a higher pitch than any other nation.

The architect, by comparing his work with organised bodies, discovers a new model by analogy; and this new model contains the system of those laws which regulate the organisation of all living beings. As each of these created beings is composed of members and organs, the dimensions of which are such that one always indicates the measurement of the other parts and the whole; the architect, in like manner, takes upon himself the task of making the constituent parts of an edifice correspond so well with one another, that the size of the whole may determine that of each single column, and *vice versâ*. The subordinate parts are regulated in the same manner; each division of the entablature is endowed with the faculty of setting forth its own size and that of all the parts with which it is to be connected; a simple triglyph determines the width of each intercolumniation; the intercolumniation indicates the diameter of the column; and the diameter of the column may be made to regulate all the other spaces: in short, all these proportions will be found to contain within themselves a general principle of Order, susceptible

of numerous modifications ; which, like those of nature, are not reducible to any geometrical rules, but are only governed by one general principle, and which are capable, in one word, of all the variety of which nature gives us at once the idea and the example.

But this principle of proportion, borrowed from organised beings, and transplanted into architecture, ought not to be reduced to a simple abstract principle of Order, intended only to satisfy the reason.

Those arts whereby the human body is imitated do not limit the study of natural proportions to formal exactness. The result of this study should be to fix the attention of the imitator on the effects produced ; that is to say, on the different impressions of pleasure that the varied modifications of nature can procure, according to the qualities and properties distributed among living creatures.

The imitation of the human body cannot be long pursued without discerning differences in the models ; without perceiving that every physical and moral quality distinguishes itself in the exterior conformation of bodies, by variations of proportion, which faithfully indicate their characteristic properties. Thus, strength, lightness, agility, skill, gracefulness, nobleness, or beauty, are all represented to the mind by a certain agreement of form and proportion, in which the eye cannot be deceived. Proportion, first of all, sets forth the most striking qualities ; afterwards those more faintly shadowed. No one can help being acquainted with this graduated scale of moral and physical characteristics, for all Attic statues of every kind possess them to their fullest extent.

The same is precisely the case with architecture, as soon as it has received an organisation to assimilate it with other imitative works. Architecture is required to express to the sight and to the mind the character of those physical and moral qualities which may be brought to view by an agreement of forms, a variety in the masses and measurements of a building, and an express meaning conveyed in the ornaments and details. These things all manifest some quality, and produce on the spectator a fixed and determinate impression ; which is one of the results of the principle of Order, when not understood merely in its common or physical sense, but in the acceptation which taste and intellect have given to it.

It is, in fact, the nature of Order, that each work of art, like each work of nature, should bear the exterior character of the qualities which compose it. It may be easily understood that we allude here to moral and intellectual order. Every edifice may, no doubt, answer the wants and purposes for which it is intended, without being fashioned by art with a view to please :

but this kind of gratification becomes necessary to man accustomed to live in cultivated society ; and, therefore, when its want is felt, this want becomes the father of the fine arts. Therefore architecture is expected to express, by fixed signs, all the principal characteristics that the proportions and details of an edifice require to have set forth. The principal characteristics are those which have ideas of power and strength, gracefulness and elegance, lightness and enrichment, connected with them. Now, as these ideas, which ought to result from the combination of lines, forms, and measures, manifest themselves most distinctly in the lightness or heaviness of the building, it is necessary to establish a progressive scale of these two qualities, regulated by the size of the mass of an edifice, in proportion to that of its supports or columns.

The adoption of this graduated system in Greek architecture distinguishes and characterises each style. What the Greeks called *ergasia*, and the Romans *ratio columnarum*, is what we call an ORDER.

Each order, or, rather, the character it expresses, is not confined to the form or dimensions of the columns ; on the contrary, it is spread through every part of the edifice. But the column is the indicator and regulator of all the rest ; and this is the reason why the name of the order is taken from its supports ; which, being of different dimensions, of different forms, and differently ornamented, are called Doric, Ionic, or Corinthian, and which are too well known to require to be described here.

In analysing the word *Order*, as generally applied to architecture, our object has been to show that the systematic employment of proportions was the exclusive property of Greek architecture ; and that each kind of column was a type of material and moral proportions brought into play by art.

Each order of columns, from the nature of its proportions, serves to represent some principal quality with which its size, form, and ornaments correspond. But at the same time it must not be supposed that the three styles above mentioned are absolutely limited to a literal copy of the attributes of each.

The Doric order, for example, which represents strength, may exhibit various shades of that quality by various degrees of weight and solidity. A slight acquaintance with the Doric monuments of antiquity proves to us the existence of many gradations of this kind : in fact, in the imitation of abstract qualities, as in that of the human form, different degrees may be discovered in the representation of strength. This is the case with the Greek orders of architecture, which vary from the column which is not quite four diameters high, to that which is upwards of six. The Doric order, therefore, is that which

imitates or expresses all the gradations of strength and simplicity. The Ionic, which succeeds it, shows, by the height of its shaft, the slenderness of its form, the elegance of its capital, and the suppression of the commemorative details of primitive construction, that it is the representative of a softer sex and age. It is, also, in the graduated scale of intellectual ideas and sensations, the prototype of certain figures of eloquence and poetry.

As we cannot give additional strength to that which already conveys an absolute idea of strength to the mind, without rendering it heavy; or make that lighter which is already the personification of lightness, without causing it to appear poor and meagre; so, in like manner, we cannot go beyond enrichment, without falling into an excess of luxury; and the Corinthian order, which is at once the type and image of elegance and magnificence, is capable of representing every necessary degree or shade of the qualities assigned to it, by the varied use of its proportions, forms, and ornaments. Experience, therefore, has proved that the endeavour to surpass this order, by the formation of the Composite was a great error.

Each of these orders is, then, in building, the index to the form, taste, and character, upon which are grounded the moral system of Order which is found in Greek architecture; and which, in that alone, is found united to the physical Order of proportions; or that positive relation of the whole to each of its parts, which occasions whatever constitutes beauty, ornament, or enrichment, to be diffused over all.

What we have said concerning the characteristic attributes of the three Greek orders, must demonstrate the great error of those who have attempted, or who do attempt, the invention of new ones.

It has already been observed, that three distinct qualities exist in the three Greek orders; viz. Form, Ornament, and Proportion; and each of these three is distinguished from the others by its object. Now it is a great mistake to pretend to invent a new order by changing only one of these three things; for it is clear, that, if the form is altered without changing the ornaments, or the ornaments without the form, or both varied to the neglect of proportion, nothing new will have been produced, but merely what is disproportionate or insignificant. The three qualities are, therefore, absolutely necessary to each other, and are dependent upon the common cause which first united them; not in an arbitrary manner, but by virtue of the general principle of harmony.

The invention of the Greek orders originated less than is generally thought in the types of their apparent forms. The Greeks, in fact, were not the inventors of Order; they only recognised the capabilities of architecture to attain a correct

medium between contending qualities; because all edifices (whether people will or will not acknowledge it) bear an aspect of greater or less solidity or solemnity, simplicity or lightness, beauty or variety.

As it was necessary to give a condensed idea of the union of these various qualities, the Greeks did nothing more than fix upon these three terms: — the Doric, which conveys the most correct notion of solid supports, grave ornaments, and short proportions; the Ionic, or middle, order, distinguished by the moderate use of ornaments, and its proportions being at an equal distance from the simplicity of the first and the decoration of the last; and the Corinthian, surpassing all in the elegance of its form, the splendour of its ornaments, and the slenderness of its proportions.

Caprice, then, cannot transpose the properties of each order, without disarranging what plain good sense has joined together; for each of the three things we have named (*Form, Ornament, and Proportion*) must appear to the most ordinary capacity to have a necessary correspondence with the others; and it would be contradictory to the nature of the things themselves to place what is richest upon what is poorest, and *vice versâ*.

We have now given the elementary principles of the orders. If different capitals were to be given to the Doric or Corinthian orders, nothing, certainly, in general theory would oppose it, provided the new ones corresponded with the simplicity of the first order and the elegance of the last. More than one variety of this kind has been introduced, particularly in the Corinthian; and, if these novelties have rarely been successful, it is because they are remarkable for exaggerations, which add nothing to the expression of the character of the work.

Such has generally been the fate of these false and pretended inventions, which, in fact, could not be inventions at all; for, as there is nothing to be found out of Nature's jurisdiction, and her laws having been discovered, once for all, in the three combinations already developed, the only materials left for the spirit of innovation to work upon are those of eccentricity and disorder.

The most ignorant of all these pretensions is the belief that by changing the leaves or symbols of the capital a new order is invented. Supposing oak leaves, fleur-de-lis, or other symbols, to be substituted in lieu of the acanthus or laurel: what then? A multitude of these varieties may be observed in the antique examples, and there is nothing to prevent their introduction. When executed, no new capital is produced, but a new ornament — still less a new order: for a true order belongs no more to the innovator, than the proportion of the human figure depends upon its clothing or head-dress.

ART. II. *A Consideration of the exclusive Cultivation heretofore awarded to Greek and Roman Architecture; with Remarks upon the present and prospective Condition of Architectural Science.* By GEORGE WIGHTWICK, Esq., Architect.

VARIED as the styles of building are, and magnificent as are several of their varieties, there is still a prevailing (though now declining) habit among enlightened Europeans, of applying the simple term "Architecture" (*par excellence*) to Greek and Roman examples. Thus, in most elementary works and small encyclopædias, the article "Architecture" will consist of little else than the history and particulars of THE FIVE ORDERS, representations of which will be the only illustrative plates. In a sort of postscript will be given a brief summary of "Gothic architecture," as it is termed, and some mention may possibly be made of the Egyptian temples; but it is likely the writer will have been perfectly unmindful of the gorgeous examples of China, of Pagan and Mahommedan India, of ancient and modern Persia, of Nubia, Mexico, and the several distinct varieties which arose in Europe during the middle ages.

As a cause for this, we must not solely regard our comparative ignorance of other matters than those treated of; because, for a long lapse of years, we remained not less attentive to a magnificent style of architecture, peculiarly our own (and constantly addressing itself to our vision), than to the styles of countries remote, and for a non-acquaintance with which adequate excuse might really be found. The publication of works on Asiatic architecture has been effected only of late. The extraordinary fact on which we would now comment is simply this, that for centuries, with our own matchless cathedrals before us, with King's College Chapel daily greeting, in all its majesty of form, in all its decorative pomp, the DILETTANTI of Cambridge, we suffered the proprieties of Palladio to take exclusive hold upon our sympathies, and ceased to practise the sublimely picturesque splendours of Gothic art. Architecture became then a distinctive word, meaning "Tuscan, Doric, Ionic, Corinthian, Composite, pedestal, column, entablature, attic, and balustrade." The romance of architecture was put aside, and its arithmetic reigned exclusively. No longer were the poetical ramifications of the "alley'd walk emulated in stone." It was now the student's practice to resolve the art into a simple Rule of Three operation, performed thus:—"As the length of a man's foot is to his height, so is the diameter of a column to the order required."—"Answer, — Doric."

No censure, nothing indignant, is here intended. The fact is simply stated to show that any particular architectural mania is not necessarily the consequence of contagion, imbibed from any

particular examples of art. That buildings, vast and splendid as the old cathedrals, should cease to arise, is at once sufficiently accounted for in the decay of Catholicism. Money for their erection is no longer to be obtained by holding up the Pope as a bugbear, or indulgences as a saleable commodity. The flood-gates of the ecclesiastical reservoir, being drawn up by Harry the Eighth, forth rushed its torrent of wealth to fill the miscellaneous channels of commerce. Poor Cardinal Wolsey may be regarded as the last buttress of the old ecclesiastical structure, which had seen its best days when honest Martin Luther took a nun to wife. Such is a brief outline of the departure of Gothic art; which went out of the church directly that the ladies came in.

As one of the leading causes for the almost exclusive cultivation of Greek and Roman architecture during the last two centuries, we may acknowledge the repression of fanciful vigour, consequent on the circumstances which originated the new and very opposed habit of systematic care. Powerful but sober reflection took the place of bold and somewhat heedless invention. Perplexed, at length, by the glitter of multifariousness, men turned to contemplate the substance of simplicity; and that *whole* was deemed the most worthy which was most perfect in the meaning and fitness of its component parts. Analysis, facts, and deduction supplied the places lately held by generality, fancy, and assumption; and Bacon, Lord Verulam, was revered for that philosophical exercise which had thrown Bacon, Roger, into prison. The *Novum Organon* of the former brought ridicule upon the wild theories of Cosmas Indopleustes; and the genuine beauties of romance might have been crushed beneath the ruins of what really merited destruction, if Shakspeare had not sprung forward in the midst of the falling system, to rescue much of its better part, and to show the full compatibility of imagination and feeling with truth and philosophy.

The romance, however, of architecture had had its season, and the new school was likely, even on the score of mere novelty, to be, at least for a time, warmly cherished. The architecture of Rome (which must, in a general sense, be regarded as an Italian edition of that of Greece) was now invited into England, as most companionable to the newly constituted public mind. It was in its nature systematised; defined both in detail and combination; subject to laws founded on simple principles, the acknowledged issue of ripened experience, unadulterated by incongruities, with no pretensions to be other than perfect in its kind, but to the full making good those pretensions.

These were qualities which in other styles, more gorgeous in decoration, and more picturesque in form, were, we will not say wanting, but not obvious. Mr. Nash was not then in being to

issue his "positive orders;" so there was at that time no architectural order acknowledged save the three of Greece and the two of Rome. Every other existing style might have been superior in visible effect; but as no other was so perfect in definable reasons for being what it was, the style now alluded to gradually established itself on a footing of favour, which has become, throughout the enlightened world, more and more certain.

While an exclusive cultivation of Greek and Palladian architecture was much to be deprecated, the general favour in which they have ever been held is, at least, a testimony to their worth. It is certainly most desirable that the term "Architecture" should now be understood in its magnificently comprehensive sense; and that even elementary works should make much more than their hitherto slight allusions to the splendours of Asiatic and Egyptian art; to the interesting examples of the middle ages, as seen in southern Europe; and, in particular, to the ecclesiastical wonders of our own country. But it is not less desirable that the architectural student should still commence (as, since the times of Inigo Jones, he has commenced) with his Latin and Greek grammar; for, as the classics form the soundest foundation for the superacquirement of other languages, and afford enviable facilities towards the delivery of elegant English from the pulpit, in the senate, and at the bar; so will they yield corresponding means to an architect, though he should be commissioned to erect a Gothic church, to reform a Gothic House of Commons, or to try the Gothic cause in a new Court of Chancery. Greece will equally benefit, in a respective sense, both him who peruses her rolls of papyrus and him who studies her Parian marbles. A pedantic habit will be in either case equally absurd. As a means, the *Iliad* and the Parthenon are of equal and unquestionable value. It is only by regarding them as an end, that many other things, perhaps equally good, are neglected.

There was a threefold reason, then, for the partiality shown towards Greco-Roman architecture, when first introduced into England; viz. its mathematical certainties, its charm as a novelty, and its accessibility as to cost. In contemplating the ecclesiastical structures of their own country, Englishmen acknowledged them as so many examples of independent genius; so many magnificent speculations. In contemplating "The Five Orders," they pronounced them so many examples of ripened judgment, so many elegant conclusions. They looked with mixed emotions of awe and ridicule upon pieces of architecture, grand in their various forms, but grotesque in many of their details; they gazed with mild and undisturbed pleasure upon the classic temples, uniform in general plan and elevation, and strictly beautiful in all their component particulars. The

same feelings would actuate them in comparing the classical styles with those of India and Egypt. In these, as in the European Gothic, an *idea* of surpassing grandeur might be allowed; but the *creature* would, in neither instance, be admitted as perfect; and, as it was now the public impulse to collect facts, and not to cherish uncertainties, the consummate maturities of Attica and Latium were admitted through the vestibule of sober examination into the hall of perfect favour.

To render more certain the stability of this favour, the only known work on architecture, by an ancient writer, was the volume of Vitruvius; and that, I need not say, was exclusively upon the subject of Greco-Roman example. By the aid of this book, persons were enabled to realise perfection of a certain kind without much troubling their inventive powers. Rome afforded palpable illustrations of its laws. Palladio and his disciples (Continental and English) took the oath of allegiance; and engraving, which had by this time ripened into ability, disseminated over Europe the newly revived style, and that only. The mosquish architecture of enslaved Greece was neglected, and considered as false as the Koran; the pointed architecture of Catholic England was rejected with the Pope's supremacy; and, as to the monumental grandeurs of India and Egypt, they were left, as worthless bones of contention, between the half savage inhabitants of their respective countries, whether pagan or infidel, and their well-matched competitors, the tigers and crocodiles. Thus much for the causes which have, till recently, confined the current meaning of the term "Architecture" to Greek and Roman examples. Proceed we now to consider the present and prospective condition of architectural science.

Without dwelling upon the causes, natural, political, or moral, which have brought about that progressive activity which forms so distinguishing a feature of the present era, which became more obviously perceptible about half a century back, and has since been urged by an ever-increasing impetus, we may certainly congratulate ourselves in having lived in an age interesting from its constant supply of important novelty, its numerous revealments of hitherto concealed antiquity, and its multiplying power upon agents, which, though long known, had been heretofore ignorantly limited in their application.

Among the numerous effects of this great movement, is the opportunity for expanding our views with respect to that world of varieties which now comes under the comprehensive title of Architecture. A vast pyramid of facilities has been erected, the apex of which commands a panorama of extent hitherto unconsidered, though not of such extent as to put aside the necessity of far loftier exaltation. In bringing this pyramid to its present height, Stuart and Revett, Wilkins and Cockerell, Desgodetz,

Cressy, and Taylor, Denon and Belzoni, Daniel, Chambers, Murphy, and others, have laboured industriously. By the aid of magnificent works from the pencil of the undaunted traveller, we may at length be generally informed as to the wonders of Asiatic art, and more than generally acquainted with the splendours of Egypt. England has obtained all necessary information as to Greek architecture, and considerable information as to that of China, and of ancient and Mahomedan India. This she has done through the zeal of private individuals. What might she not do by emulating the example set her by the French government in defraying the expenses of Denon's great work on Egypt? The publication of mere views, with general descriptions of foreign architecture, is a good of very limited influence. It is the geometrical plans, elevations, and sections, which alone give value to architectural works. That these will, in time, be afforded, there is no reason to doubt; but, if it is to be left to the professional zeal and pecuniary means of private individuals, a longer period must be allowed than what would suffice under the commission of a wealthy government; while ruin must, in the meantime, continue its wasteful ravages.

In reviewing the present condition of architectural taste in England, we may refer, with extreme pleasure, to the reviving love for our cathedral specimens, and the rapidly increasing favour yielded to pointed and perpendicular architecture. Unassisted by pecuniary means to rival the splendid vastness of York or Salisbury cathedral, we have yet shown, in several recently finished examples, that nothing but those means are wanting. As the grand promoters of this, we must honestly mention the zeal of certain individuals who have geometrically delineated, from laborious and accurate measurement, the leading Gothic examples of Europe. In this good work our own countryman, Britton, has been prominently industrious. The art of engraving has been advanced to an extraordinary pitch of perfection; and, by the scenic beauties of the quarto volume, our sympathies towards the noble realities therein pictured have been once more aroused. While the eye of the general observer is attracted by the picturesque beauties of the book, the attention of the professional eye is given to its geometrical plates. The one party imbibes feeling, the other acquires information; and the number of Gothic buildings, public and private, now arising in all parts of the kingdom, testifies an active revival of, perhaps, the sublimest variety of the architectural world.

The prospect of architectural improvement in England (as, indeed, throughout France and Germany) is cheering. And here architecture confesses her obligations to the water-colour draughtsman; the dissemination of whose magic effects, by the

multiplying influence of the engraver, has done, we may say, every thing.

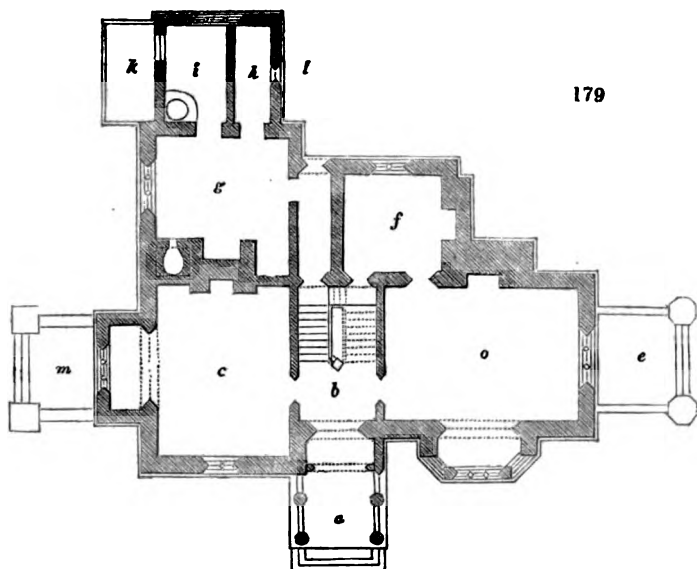
And, what is to be the effect of an extended knowledge of architecture in general upon Greek architecture in particular? Why the latter came into favour has been already mentioned. It has continued in favour; because, however strong may be our inclinations to overthrow the narrowing boundaries of exclusiveness, not less determined are we to retain our undiminished regard for every thing of genuine worth hitherto included within those boundaries. The critical affections of men are not limited like their pecuniary means; bountiful here, because penurious there. Our minds should never leave us (as our purses sometimes do) to rob Peter that we may pay Paul: nor need we fear that, in cultivating a knowledge of architecture in general, we shall at all injure the classic reputation of Greece; a reputation founded on principles firm as the rock of the Acropolis, and built up with materials pure and solid as the marbles of Pentelicus.

Plymouth, March 19. 1836.

ART. III. *Design for a Villa in the Style of the Second Class of Gothic Architecture.* By E. B. LAMB, Esq., Architect.

AFTER a lapse of considerable time, which has been occupied principally in the practical pursuit of the art, I again send you a design, in continuation of my series of designs for Gothic villas. This villa belongs to the style of the fourteenth century, or second class of Gothic architecture; and is principally composed for the purpose of showing the application of timber, plaster, and stone, in a building adapted for the residence of a person of moderate means. The situation for such a villa might be either in a wooded plain, or sequestered valley, where the scenery shows marks of rural cultivation in the well-dressed fields, and the ruddy cheerfulness of the inhabitants of the vicinity. The accommodation in this villa is as follows:—

Ground Floor.—In *fig. 179.*, the porch (*a*) is open at the sides, and roofed with ornamental tiles on rafters, which, in some parts of the country, might be made of oak; *b* is the entrance-hall and staircase; *c*, the dining-room; *d*, the drawing-room; *e*, a landing-place, or entrance from the garden to the drawingroom; *f*, study; *g*, kitchen; *h*, pantry; *i*, scullery; and *k*, coal and wood cellar. Under the study may be a wine and beer cellar; and other conveniences might be in a small building, either detached, or adjoining the coal and wood shed, if such officēs should be required.



The Porch.— Agreeably to my usual practice, I will now begin a brief description of the whole by first entering the porch. This should be paved with foot-tiles, or York paving-stones; or with ornamental tiles, something in the character of the tiles of the fourteenth century; an admirable substitute for which has been invented by Mr. Wright, and described in the *Encyclopædia of Cottage Architecture*, p. 1012. The door should be of oak, or painted in imitation of oak; and the whole of the porch should be constructed of wood. Oak would be most in character; but in some of the meaner sort of buildings of wood and plaster of this period, other woods were used when they were more conveniently to be obtained.

The Hall and Staircase.— Of the hall little can be said, as there is but little space for decoration. It should be paneled with oak. The joists of the upper landing might be seen here, and they should be of grained oak. A very few pieces of armour, and some ancient implements of sport or husbandry, might form part of the decorations of this hall and staircase. The staircase should be of oak, with carved paneling. The newel in the centre of the hall might support a crest or a lamp. In the hall door should be some stained glass; and the staircase is lighted by the lantern shown in the elevations. From this small hall we will enter the dining-room, or, if you like so to call it, the common living-room of the family. The ceiling I will first mention, as it is too frequently in this part of the room that the architects of the present day fail in producing the cha-

racter required by this style of architecture. I am aware that, in the present day, the different kinds of materials used for joists, the different way in which they are employed, and, above all, the great economy required in a building, are difficulties which architects have to contend with. The joists used by the ancient architects were more massive; and, being as wide as they were deep, they could admit of a bold chamfer, which produced a degree of finish in their appearance: they were closer together. The floor boards were substantial planks; and frequently, instead of crossing, lay parallel with the joists: but this was most frequently the case in large buildings. In the present day, the joists are deep and narrow, and the flooring above them only thin boards; therefore it becomes necessary to have a ceiling, to prevent the sound, as well as the dust, coming through. For this reason, though paneling and tracery should be used in our modern Gothic buildings, it should have the appearance of being supported by the walls: there should also be some of the ribs, at least, connected with the walls; and, if only a few are used, they should be of larger dimensions than those which they have to support, or a disagreeable apparent weakness will be the effect. I recently visited a large ancient mansion in Kent, now undergoing very considerable repairs and alterations. In this building I was struck with the glaring inconsistency of several parts of the composition, but principally of the ceilings. What I have mentioned in a preceding article (Vol. I. p. 339.), with regard to ceilings, is applicable to all styles of architecture. In the mansion above alluded to, the architect has laboured to produce highly ornamental ceilings, some of which are perfectly flat, and all of which are white; but the greatest fault in one is, that the whole of the tracery and paneling are confined to the centre of the ceiling, without any connecting rib to the walls to give the least appearance of support.

In the Dining-room I would have the ceiling ribbed and paneled; the ribs supported on corbels in the walls: the ceiling should be grained light oak; and a few badges and shields might be introduced, painted of their proper colours; but, as this is but a moderate-sized house, the decoration must be also moderate. The walls of this room I should prefer being of one colour, rather lighter than the ceiling. A dado should go all round the room, rather higher than the chair backs. Some stained glass in the windows, with heraldry, would tend to enliven the room. Over the fireplace should be a glass in a gilt frame; and a few pictures on the walls, also in gilt frames, would be proper for this room. The furniture should be in strict character; but it need not be more expensive than the common furniture fit for a room of this size in the every-day style of architecture. The

generality of furniture usually nicknamed Gothic would, however, ill suit this villa. It is lamentable to see that a correct taste in this matter is so little shown by those who have it in their power to do so much in aid of their art; but, when amateurs cease to be their own architects, and upholsterers will deign to study Gothic before they attempt to design, we shall have perfect harmony in a composition. I met with an instance of amateur professorship a short time ago. Having occasion to visit a gentleman in the country on business, he, knowing I was an admirer of Gothic architecture, invited me to see what he said he considered the prettiest bit of Gothic architecture he ever saw! As he is a man of some general knowledge, I expected to see something at least tolerable; but judge of my surprise when I saw a small building in the garden, dignified by the title of alcove, or some such classic name, encrusted with Gothic tracery, pointed windows of all forms, pinnacles, buttresses, battlements, and all other massive accompaniments, cut out of $\frac{1}{2}$ in. deal! most likely with a key-hole saw! Rubbing his hands with the delight of showing his lion to a person who "understood these things," he informed me, with the greatest gravity, that he had recently very much improved his design, making it bolder. What can you conceive was this boldness? Adding another thickness of $\frac{1}{2}$ in. deal to the buttresses! This anecdote will show how little an amateur gains by being his own architect. It is evident that, although he was pleased at being the author of such a complication of forms, yet he was not satisfied with the result of his labours. There was something required to make the design satisfy him, and he soon discovered its want of boldness. These sort of buildings may please for a short time as a toy; but, from their meanness, and from the total absence of all the requisites of good composition, they will soon become an unpleasing object to their authors: for the very act of designing a building will make its composer a closer observer of others; and thus, by mere accident, he will become better acquainted with good forms, and, perhaps, be sufficiently improved in the art to prevent his committing another error.

I will now proceed to the *Drawingroom*. — First, let me lead your eye to the ceiling; the part in modern buildings most neglected. Here the same materials as in the dining-room, viz. wood, should be employed as the principal agent for consistency. But, as this room requires a more airy character, the ribs only of the ceiling should be grained: a small quantity of tracery, with its fringe-like cusps, might be carefully introduced; some party colours, and gilding, too, would not be out of place; always bearing in mind, that, as the outside of the house is a cottage, the inside should not be a palace. The panels of the

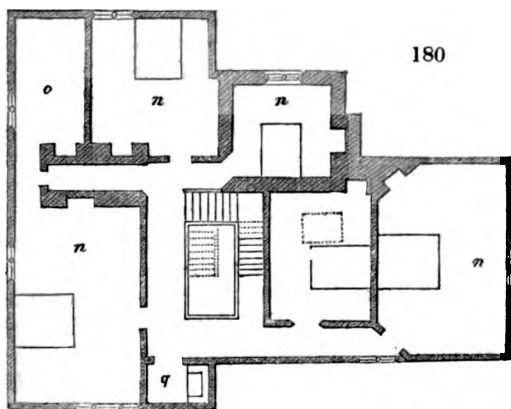
ceiling should be of a lighter colour, and the walls might be papered; although we have no examples of papering in the fourteenth century. I will, however, bid defiance to antiquarianism on this score, if the whole composition is in unison; and this cannot be without the materials are made in some way to correspond with each other. The windows should have some stained glass in them, of various hues; nor would it be necessary to confine the subjects to heraldry alone, when nature offers such ample scope for the exercise of the graphic art. Flowers, judiciously chosen and harmoniously grouped, may be made to assume a perfectly Gothic character; and, in a drawingroom, the severe dignity of heraldic characters would be less pleasing than the elegant lightness of flowers.

I am aware I am treading on dangerous ground, and may subject myself to a vast deal of censure from rigid antiquarians. But are we always to be cramped with the exact details of our forefathers? Are we never to do as they did, try something new? I again repeat what I have before stated, that it is the business of the architect to invent, and not to copy. If we fix upon a style of architecture, let us follow the spirit only of that style. We should recollect that the customs of the nineteenth century differ widely from those of the fourteenth; and that the luxuries of the present time are of a much more elegant description than when ladies attended bull fights. The window at the end of the drawingroom opens to the landing (e), and may lead to a pleasure-garden, or lawn: at each end of the steps are pedestals for plants. This I always consider a luxury, though it is one that our ancestors knew very little of. In the country, a window even with the floor always gives a cheerful appearance to the room. It is true there is some difficulty in making these windows wind and water tight; but, if they open *outside*, there is no difficulty in doing so. There should be shutters to all the windows on the ground floor. At the side of the room opposite the fireplace is a recessed window, which produces variety in the composition; as such recesses, besides acting as screens against the wind and sun, "be pretty retiring places for conference." This window may be glazed in the same manner as described for the other. Many little elegancies may form the furniture of this recess, suited to the general character of the room: but the more delicate taste and fertile imagination of the ladies will supply the subjects, so as to give the greatest interest to this situation. Of the other furniture much might be said; but I will confine myself to a few very brief remarks. I certainly would have as much looking-glass as would be consistent in this small villa; and a pianoforte. But I may be asked, Who ever heard of a pianoforte of the fourteenth century? I will answer that question by asking another: — Who

ever heard of a Grecian pianoforte? and yet the modern instruments are so called; and so they, in some respects, are made to appear; for they are bedecked with honeysuckles, scrolls, and other ornaments of a decidedly Grecian origin. Then why should we not have a pianoforte of Gothic design? It is a good subject, and, in a thousand different ways, may be well and correctly treated, without giving it the appearance of a cathedral in miniature, or a starved organ. Sofas, chairs, tables, and all other pieces of furniture, not even omitting the most trivial, should be well studied to produce unity in the whole arrangement of this room; and one thing deserves particular mention, viz. the fender: this is a piece of furniture scarcely ever uniting with its adjuncts, the grate and mantelpiece. It is a remarkable fact, that the only way fenders are ever made to unite to the chimney-piece is, by cutting a notch out of the bottom, and fitting the fender, as it is called, to the fireplace; that is, the bottom into the jambs; but not a line of connexion is looked for between the iron and the stone. The ends are either in the middle, or approaching towards the inside or outside of the mantelpiece; and there is either brass on bronze, or steel, in the fender, opposed to black, white, or grey marble in the chimney.

Study.—Adjoining the drawingroom is a small study; which might have a flat ceiling, ribbed, paneled, and supported by a cornice round the walls. There should be a dado round this room; and the walls might be of a stone-colour, or they might be papered with rather a grave-coloured paper. In the window there should be some stained glass; and round the room some book-shelves, and other furniture suited to this apartment.

The Kitchen (g) should be supplied with all the requisites for

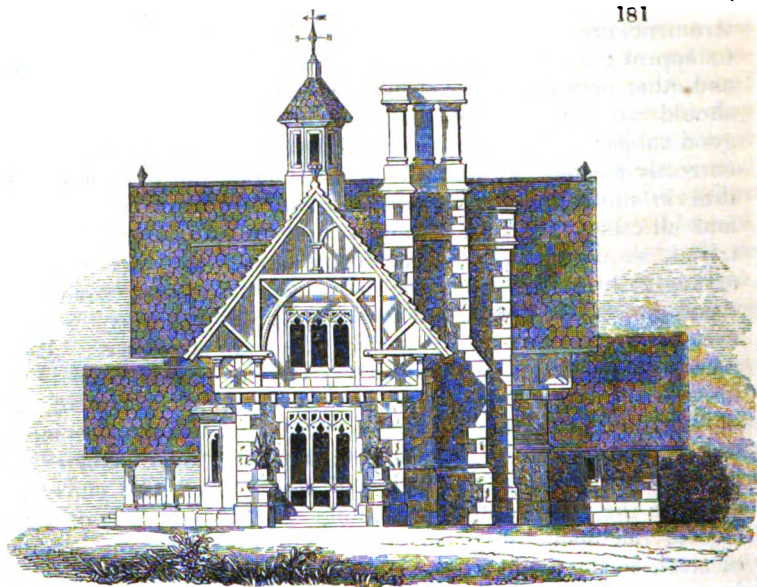


a house of this size; and the offices attached to it, if not considered sufficiently large in this design, may be increased in size without materially altering the general effect of the elevations.

Bed-rooms, &c.—

On the one-pair floor are five bed-rooms (*n n*, *fig.*

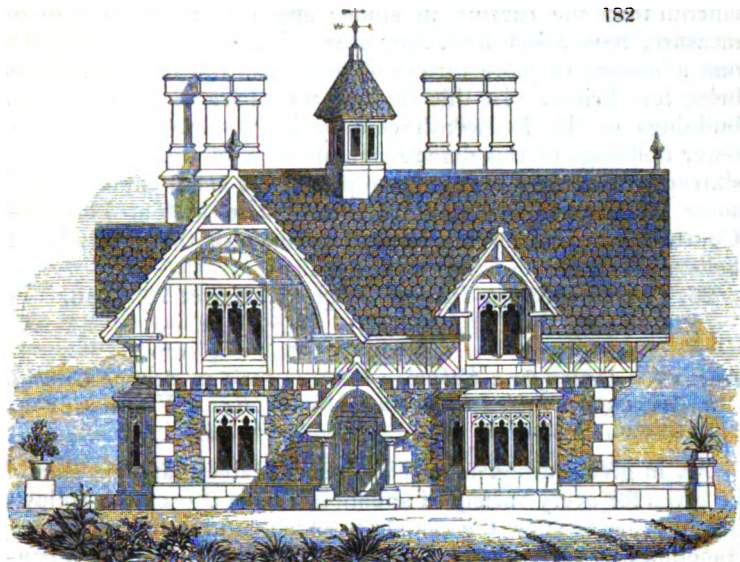
180.), a dressing-room (*o*), and water-closet (*q*). By referring to the elevations, it will be seen that other rooms may be obtained



in the roof, if they were required; but in this design the roof is only occupied with storerooms, having a staircase leading from the landing to them.

Elevations.—In the elevations (*figs.* 181. and 182.), I have endeavoured to keep in view the character of buildings of the fourteenth century. The lower part of the house, tower, and chimney-stacks may be built with squared stone, hammer-dressed for the quoins and plinths, window-jambs, &c., and the interstices filled in with rubble or flint: the mullions and tracery should be in wrought stone or oak. This variety of construction was frequently the case in the buildings of the fourteenth century. The porch, a side view of which is shown in *fig.* 181., should be built of wood; and there are still existing many ancient porches of wood to village churches and cottages, which well deserve attention for their picturesque character. They should be studied, to ascertain by what means they produce the strong impressions they do upon us; and not for the purpose of transplanting them, as is too frequently the case. The addition of a porch to a residence is both interesting and useful: first, as it breaks the monotony of the flat surface, by the depth of shadow it produces; and, secondly, as it screens the hall from the weather in all seasons, besides being an agreeable shelter while waiting for admission into the house.

The upper part of the house is to be of timber and plaster, as shown in the elevation of the entrance front, (*fig.* 182.) Before



the general introduction of rich tracery in the barge-boards, the same composition as the internally constructed roof was continued over the framing outside, so as to form a protection from the weather. It was at first merely a continuation of the roof, without any pretence to decoration; but, by degrees, pieces of timber were added, so as to form an arch, and these soon became enriched with hollow mouldings. A trefoil head was first constructed in this way; but, in a little time (in the fifteenth century), the whole of the timbers had become decorated, the large arch was abandoned, and the rafters were no longer seen in their rough form, but were carefully concealed by the barge or verge-board, which was decorated with the most elaborate tracery; while, at the point of the gable, there was a richly decorated pinnacle, surmounted by a weather-vane. Not only the gables, but the whole of the timber framing presented to the view, was highly enriched; and, in many of the ancient towns of England, there may be seen, in the buildings now fast giving place to modern alteration, the lavish display bestowed upon the houses of our ancestors. In Coventry may be seen some of the most interesting of these specimens, affording, at once, studies for the architect and the painter. The windows of the wood and plaster houses partook of the same enriched character: they were not so massive in their mullions as those in houses built of stone, and were almost always more fanciful in their tracery. Indeed, the carving in wood of all the periods of Gothic architecture was much more varied and

fanciful than the carving in stone; and this must, in a great measure, have arisen from the nature of the two materials; the one admitting of more variety of form than the other, from its being less brittle. In this design, the character of the wood buildings of the fourteenth century is preserved. There are fewer buildings of this date remaining than of the fifteenth and sixteenth centuries; but, in some porches to small churches, and some halls, examples may be seen. The hall at Hurstead Court, Kent, was an interesting specimen of this style; but I believe this building is now destroyed.

25. *Henrietta Street, Brunswick Square, August 19. 1836.*

ART. IV. *Design for a Suburban Villa, on Half an Acre of Ground, in an unfavourable Situation.* By RICHARD VARDEN, Esq., Architect, Worcester.

As, in giving designs for villas, it is desirable that plans should be given for every variety of situation, I have chosen the following, in order to show the manner in which natural difficulties may sometimes be surmounted, and those points that are usually considered unfavourable be rendered unimportant, or be converted into interesting features.

The land on which it is proposed to lay out this villa consists of somewhat less than half an acre, and is one of a series of allotments now on sale in the neighbourhood of this city. My object in selecting it is, that the advantages or disadvantages to which I may allude shall be such as really exist in nature, and not the mere creations of my fancy; as that may probably suggest only such circumstances as can be readily turned to account, or made subservient to the beauty of the whole, and, therefore, not be so suitable for your purpose.

This piece of ground is situated between two roads, and is 90 ft. wide and 225 ft. deep, sloping gently to the west, in which direction it commands a pleasing view of the city; the towers, spires, and roofs of the cathedral, and the other churches and public buildings, being alone visible, as the common structures are concealed by trees planted lower down the hill and in the intervening meadows. The whole is backed by the Malvern Hills, a granitic range 1500 ft. high, the outline of which is sharp and bold, and of a mountainous character.

In the north and north-west direction, the Abberley Hills are visible over a considerable expanse of rich and highly cultivated country, consisting of luxuriant meadows and tillages, thickly interspersed with those beautiful apple and pear orchards that are the pride of the county. To the south, a distant view, over a comparatively flat country, may be obtained, in which there is not discernible any particularly striking feature.

One great disadvantage in this locality is, the necessity of placing the house in the upper part of the enclosure, with its principal elevations east and west, ranging with the buildings already erected; thus giving to the garden and the garden front a westerly aspect; one of the worst that can be named, and which is unfit for the windows of the principal rooms. This has caused me to adopt a somewhat novel arrangement, for the purpose of obviating these defects, which I will describe.

The villa is small; and is to be rendered suitable for the residence of a genteel family who have a fondness for the fine arts, and who wish economically to possess, and be surrounded by, the usual comforts of modern life, with the addition of some of those elegancies that are now seldom seen but in the mansions of the wealthy, and not always even there.

The front is to be formed of real or imitation stone, and to be somewhat more ornamented than is usually seen in the neighbourhood of a provincial city; but the whole must be characterised more by elegance and neatness than splendour or magnificence.

The front garden (see *fig. 183.*) is rectangular; and it is bounded by the house on the west, a conservatory (A) on the north, stable offices (B) on the south, and a dwarf wall and iron railing on the east.

On entering the gates, a broad gravelled walk leads direct to the portico (C), which is raised from the ground four steps, and is formed of two columns and two antæ, in front of a curved-backed cell (D), from which it is separated by three arches that support the front wall of the house. I imagine there can be no objection to columns and arches being employed together in such a case as this; for they each have their distinctive uses: columns could not, with propriety, be placed for the support of so large an incumbent weight of masonry as the whole story of a house; and I know of nothing so evidently suitable for the purpose as arches, both on account of their real and their apparent strength; and the effect of arches seen between columns is good, and generally meets with the approval of painters, as I think it is likely to do in the present case, particularly as the deep curved-backed cell and niches will show them out to advantage. The cell is to be raised one step above the portico, and is to be paved with ornamental tiles or tessellæ, if they can be obtained. The entrance door is in the centre of the curved back; and has, right and left of it, a niche for the reception of a plaster cast of some beautiful antique statue the size of life. Against the side walls may be placed stands for such rare exotic plants in flower as may be thought most deserving of attentive examination.

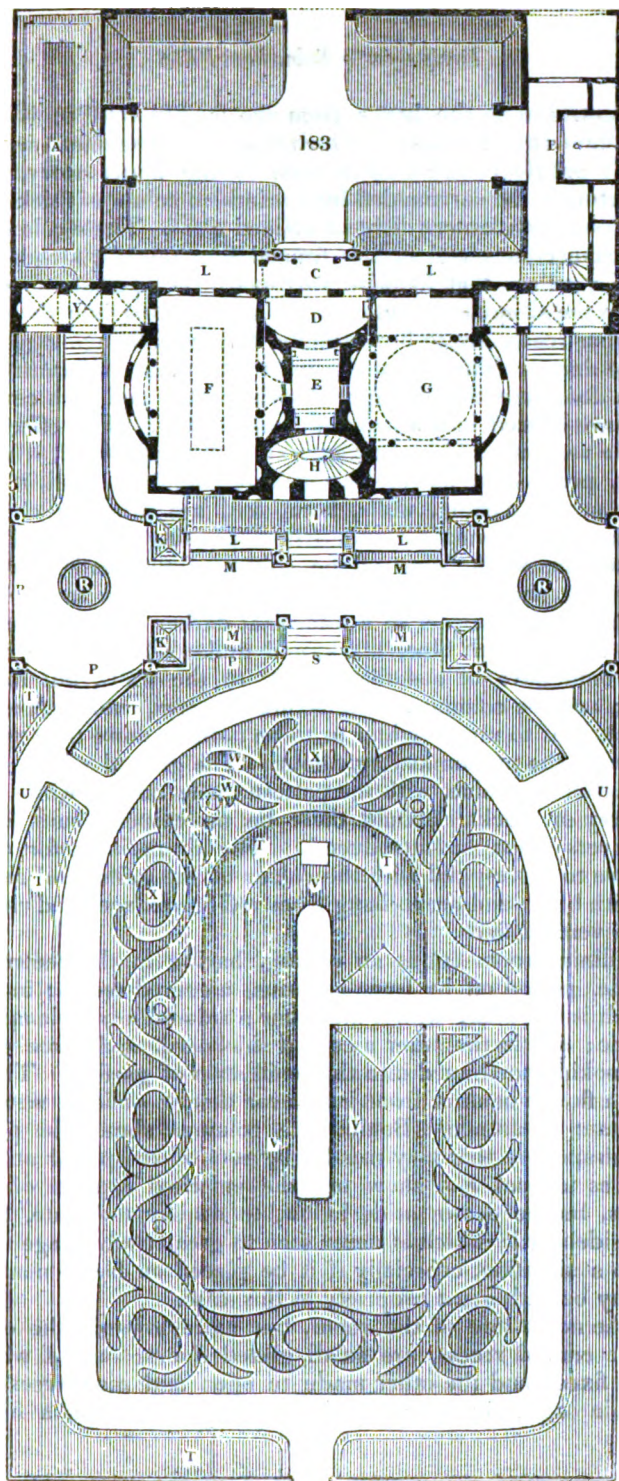
The columns of the portico are to be but one story high;

and they are to be surmounted by an architrave cornice, that is to pass all round the house, arcades, conservatory, and enclosure wall of the stable offices. The roof is to be finished with an eaves-cornice and gutters, and be covered with artificial stone tiles, similar in form to those of the Temple of Diana Propylea, the eaves-cornice and ridge being ornamented with antefixæ. The chimneys are to be visible, and to form a part of the design.

The kitchen offices, &c., are to be in the basement floor, and are to receive light from a broad area, having a wall round it 2 ft. high, above the front garden; on the corners of which, against the steps and portico, are to be placed slightly enriched vases of artificial stone. The side intercolumniations of the portico are to be fenced in by a neat metal railing; framed, not into the antæ or the columns, but into stiff standards placed close against the bases.

The area wall is to be continued all round the front garden, except the doorways, forming at the sides a basement to the conservatory, and to the stable enclosure wall; forming, in front, a foundation for the iron railing. Against this wall earth is to be thrown, and formed to the angle that flower-stands are usually arranged at; and in this are to be planted choice flowering, exotic evergreens of small growth, placed so as to produce the effect of ranges of stands. The piers, which the gates and front iron railing are framed into, must be massive, and have enriched heads, or be surmounted by short, thick, enriched bronze shaft and lamps, according to circumstances. There is to be a broad walk, crossing at right angles that leading to the porch, which will conduct to the stable-yard and to the conservatory.

The conservatory must be made ornamental without any great outlay of money, and must form a part of the general design. This, I think, may be done by carrying the architrave entablature, and also the dado, of the house, round it. The uprights and sashes may be framed into them much in the usual manner; but the front lights I would have contrived to slide down into this dado wall, and be out of the way entirely when air is admitted to the conservatory, in preference to being opened outwards, as in the usual manner. The rafters are to be tolerably close together, and be two to every upright in the front framing; and they are to be ornamented along the ridge and cornice with antefixæ, similar to those to the roof of the house. Should any flue chimney be shown, it must be introduced as an acrota. The stoke-hole is in the area, and is approached from the stable-yard by steps by the door into the arcade. On each side of the steps into the conservatory, and of the yard gates, are to be piers, the height of the area wall, with vases placed thereon.



The entrance to the house from the curved cell (d) is into the vestibule (e), the ends of which have strong segment-arched ceilings; but the centre is to be open to the upper story, and the aperture to be surrounded by Corinthian columns thick set, and supporting a lantern light of stained glass. These columns, with a connecting metal railing framed into upright standards, part off a gallery that likewise surrounds the aperture to give access to the sleeping apartments. The doorways into the cell, and the staircase, are to have simple draperies, hanging partly over the doors. The side walls are to have, in the centre of each, a door into the dining or drawingroom; and each corner is to have placed in it a pedestal and a statue. The effect of this little vestibule will be striking; and, although small, it will, I think, possess an air of considerable grandeur; and, if the colours of the ceiling, walls, floor, &c., are properly chosen and arranged, I think it cannot fail of pleasing. I should recommend the walls being of the colour of the feathers on a jay's breast; and the glass in the lantern light the same, with ornaments, and a border of a somewhat darker tint of the same colour, relieved with blue, black, and dulled white. The ceiling I would have of a similar colour to the walls, but much darker; and the columns, architectural features, and statues of the same, but so much lighter as to be nothing more than white tinged with the predominating colour. The ground of the carpet must be light blue, with the pattern made out by white and dark grey or black. Should there be no carpet, chairs with blue covers must be introduced. The draperies before the doors are to correspond with the colour of the walls, and to be lined with blue; and are to hang from red bronze rods and rings, in large vertical folds.

The dining-room (f) is an oblong, having in the centre of each side, parted off by Ionic columns, a curved recess; in one of which is the door, with a niche for a side-table and lamp on each side; and in the other a curved sideboard, and three windows, looking northward into the small strip of garden. There will be a flower-bank in front, and over that an oblique view of the distant landscape. Behind the columns should be plain simple draperies, that may usually be somewhat spread at the top, so as to back and show out the enriched capitals of the columns, but be drawn aside below, to display the plate, &c., on the sideboard; which is never seen to greater advantage than in such a situation, especially if it be placed on black marble, as it may be with great propriety in this case.

On the north side of the room, but more towards the ends than the curved recess, are small glazed doors; one of which is to be fixed, and the other made to open and give access to an arcade (z) of three arches, that has a groined roof, a niche

and statue at the end, and two others opposite the side arches, with a doorway into the conservatory, opposite the centre arch, and the flight of steps down to the terrace. Opposite each of these sash doors is a niche; and there are two others at each end of the room; the whole of which are for the reception of plaster casts from antique Bacchanals, or similar figures. The fire-places are in the centre of the ends; and each is to have over it a small window, commanding the front or back view, with a looking-glass sliding shutter, that may be opened or shut by a concealed rack, and be made to fit exactly into a gilt margin, that shall form the window dressing at one time, and the glass frame at another. I describe these shutters thus particularly, as, during a considerable portion of the day, that to the west window must necessarily be closed, to exclude the unpleasant glare and heat of the afternoon sun. Similar sashes may with great propriety be placed to the glazed doors; where mirrors will produce a good effect, as they will reflect the opposite niches and statues. The dining-table is represented by the dotted lines in the plan; and is sufficiently large to accommodate, when drawn out to its whole length, twenty-six persons.

Were this room for my own habitation, I should prefer having the colouring deep and rich. I would have the chimney-pieces, sideboard tops, columns, and antæ, of real or imitation black marble; and the entablature, architraves, dado, and skirtings painted and polished to match. The compartments of the ceiling should be of a deep purple; and the cornice, ceiling beams, doors, window-sashes, &c., painted in representation of a reddish-coloured bronze. The curtains should be crimson damask, lined on the edge and bottom with one width of purple silk, and be looped up with thick purple cords. They should be merely suspended from plain bronze rods and rings, and should hang in large vertical folds, and be without any valances, or draperies, at top. There should be inner sun curtains of figured muslin hanging down, with worked Vandyck edgings, and drawn back with crimson silk cords. The walls I would have of very dark oak, or covered with a purple paper. The carpet green, patterned with light and dark tints of the same hue. The chair-covers crimson; and the table-covers the same, lined with white, and bound with gold, with a large tassel of the same hanging at each corner.

In this room, especially when thus decorated, I think there would be some very pictorial effects. The curved recesses, and the sideboard behind the columns and curtains; the columns backed by curtains; the view up the arcade, with the statue and niche at the end as a central object; and the vista seen through the vestibule and drawingroom, when the doors are opened, looking between the columns, &c.; would all be sources of interest,

and, I trust, of beauty. The dark rich colouring I have described, I consider to be appropriate to the destination of the room, and by no means likely to produce a gloomy effect; as the great number of windows will admit ample light during the day, and at night any quantity may be artificially commanded. The colours are powerful, and some of the contrasts great; but I think they would harmonise well. The crimson and purple would produce an effect of splendour; and the many dark compound tints surrounding the furniture would impart to each article a brilliancy unattainable in an apartment coloured in a lighter tone.

The drawingroom (a) is of similar form and size to the dining-room; and the door from the arcade is an entrance to the stable-yard. If it were not for the particular aspect of this plot of ground, I would change the situation of the two rooms; then the drawingroom would be in immediate connexion with the conservatory, and the dining-room with the stable offices: a much better arrangement than the present; but which, if carried into effect here, would assign the worst aspect to the best room, and the reverse. However, if such an alteration were considered desirable by a proposed occupant, it could be carried into effect without disarranging the design. The drawingroom is to have windows over the fireplaces at the ends; with looking-glass shutters, for excluding the afternoon sun when it becomes troublesome.

In addition to the columns parting off the curved recesses described in the dining-room, here are to be other columns parting off the ends of the room, and forming a square compartment in the centre, which is to have a groined ceiling, with a large flat dome in the middle.

In this room the columns are to be Corinthian, of scagliola marble, in imitation of verd antique; with the entablature, ceiling, doors, skirtings, dado, architraves, &c., painted to resemble bronze; and the chimney-piece really of that metal, made to assimilate, as to height and decoration, with the dado and skirting; which it might do, without being inconveniently low, were the fire to be made on the hearth, with air admitted from below, as in Sylvester's stove. The walls are to be covered with apple-green silk, either stretched plainly over the whole surface, or introduced as fluted panels in bronze frames. The curtains are to be of the same colour, lined (those to the windows partially, and those behind the columns wholly) with rose-coloured silk: they are to be full, but very plain, merely hanging in large downright folds when in use, being at other times looped back with gold or rose-coloured silk cords, and large tassels. The sun curtains are to be of light figured muslin, either quite white, or of a delicate pink colour, looped up

with rose silk cords. The rods will be best of bronze; but, if a large quantity of gilding, by way of chandeliers, lamps, &c., be introduced, then they may be of gilt brass: but this I do not recommend, as bronze appears to me far preferable. These articles, with gilding or glass, and other showy materials, scattered about the ceiling and upper part of the walls, always have the effect of destroying the repose of the apartment, and diminishing the brilliancy of the furniture, which ought to be preserved in its greatest strength and splendour, as it would, in the absence of living beings, unquestionably form in a painting the chief and most prominent object; and, for the apartment to be pleasing, each article must have the same repose, strength, or prominence, as would be requisite to form a good picture; as every view we take of it ought to present, in reality, to the eye, exactly the selfsame scene which the painter produces artificially on his canvass. They differ only in so far as one is reality, and the other its representation; the same laws of composition (*viz.* grouping, colour, *chiaro-scuro*) applying equally to both. The chairs are to be covered with mohair plush (a newly introduced article, of great beauty and richness, and likely to stand much wear,) of a rose-colour. The carpet may be a maroon; but I should prefer a buff or white ground, with red, yellow, and green flowers. The table-cover, for grand occasions, to be rose-colour and white, lined with white satin, edged with a broad gold band, and decorated with massive bullion tassels at the corners; but, for common use, one with yellow binding and tassels, and white kerseymere lining, might be substituted.

The curtains introduced behind the columns will greatly enhance the beauty of the apartment, and will, when wholly or partially spread, form a backing to the columns that will display their enriched capitals, whether gilt or not, to very great advantage. At the same time, they will be far from useless; as, by drawing them, either of the ends may be converted into a very comfortable apartment for a small party, that will have most of the advantages of one of a suite of rooms connected by folding-doors, without its unsightliness or liability to draughts of cold air.

The decoration of this room would not be particularly expensive; as the effect depends more on the arrangement of the objects and colours, than on the costliness of the materials composing them.

It is the staircase, the only one in the house; for, in so small a villa as this, where few servants would be kept, a second is hardly called for. It is of ample size and elliptical form; which readily admits the introduction of a stone staircase, indestructible by fire. There is a lower flight of steps to the basement offices. The floor should be of Wright's ornamental tiles, or tessellated pavement; and the walls and ceiling should be painted in the

cream and ochre colours, and with ornaments similar to those found on the ancient terracotta vases.

I is a veranda. Architects avoid introducing these appendages to their designs, from the idea that they are always unsightly. Surely, there is a possibility of their being made ornamental, let the difficulties be what they may. At any rate, one placed here will be found by the inhabitants of the house a great luxury; as it will partly shade the western wall from the afternoon sun, and preserve the principal rooms, towards the close of the day, from the great heat to which they would otherwise be liable. I propose having it to appear as a temporary awning, and the architecture to be made complete without it; and thus, like Alexander, to cut the knot I cannot untie. No person, let his taste be ever so fastidious, can, I imagine, object to those delightful awnings, spread in the streets of every Continental town before the principal shops; adding, by their brilliant-coloured stripes, to that gaiety in which our dwellings, both in town and country, are so deficient. These are not displeasing, even to artists; as witness the prevalence of them in the works of Prout, Stanfield, Nash, and our other topographical painters; and, therefore, I cannot see why we should hesitate to adopt them as accessories to our villas. The columns which support this awning are to be very light, and slightly ornamented: and, as well as a wire railing between them, painted stone-colour. The roof, or awning, is to be of such a curve as canvass would naturally take were it fastened to the wall along one side, and the other allowed to hang loosely over the plate that passes from the top of one column to another. This plate is to be of copper, having the joints concealed; and it is to lap over the front, and to hang down 18 in. or 20 in.; the end of it being cut into pointed pendants, one short, and one long, alternately; while hanging from each point, and suspended by wire hook, may be a turned wooden tassel, 4 in. or 5 in. long, that may be moved by the slightest breeze. The inside of the roof of the veranda is to be painted a cream-colour; and the outside the same, but with vertical stripes of light bright red, one broad and two narrow ones to form a pattern, the centre of which is to correspond with the point of each pendant. The tassels are to be of the same colour; and there is to be an edging of it round the pendants, as though it were a binding. The floor is to be paved with stone, ornamented tiles, or tessellæ. The niches under the veranda are to be for statues, and the remaining space may be occupied by flower-stands, glass globes containing gold and silver fishes, bird-cages, &c.

From the veranda, opposite the house door, are broad steps down to the terrace, having flank walls surmounted by sculptured vases. *x x* are stone platforms, somewhat lower than the

floor of the veranda, on which are to be placed stands to receive pots of the most choice exotic plants in flower. L L are the areas to the basement story; all of which have plain breast walls to fence them from the garden. The area is continued under the veranda, that being supported on piers.

M M are flower-borders, edged with an ornamented kerb of artificial stone, similar to Austin's mignonette troughs, that may, perhaps, have a pipe within it, pierced so, that when connected with a head of water, each hole may be converted into a miniature fountain, jetting in different directions, so as to cover the whole surface of the border with an artificial shower.

N N are flower banks; that is, earth thrown against the wall at the angle, which artificial flower-stands are usually arranged at, into which pots of hardy plants may be plunged while in flower, and the space behind them filled up with small, flowering, evergreen shrubs. The walls (o o) are supposed to be 2 ft. or 3 ft. higher than the floor of the principal rooms of the house, which will not be sufficient to interfere with the view of the distant landscape; but, from the height it is above the natural surface of the ground, will be sufficient for every purpose of protection. P P are the parapet walls of the gravelled terrace, the same height as those round the area; and Q Q Q are vases.

R R represent fountains; but, if these cannot be obtained, groups of statuary, or sun-dials and flower-stands, must be substituted.

S S are steps from the terrace into the garden. The walk here is broad, and forms a regular or artificial figure, as the piece of ground is too small to attempt concealing the boundary fence. It is, therefore, made to run parallel with it; having on the outer side a range of flower-banks (T T), edged with turf, and backed by the enclosure wall, covered with evergreen and flowering creepers. Much effect may be produced by occasionally varying the outline of this wall by the introduction of vases, or other objects of art. U U communicate with sheds and other requisite garden buildings, formed under the terraces, that will be invisible from the principal walk. In the centre of the garden, but separated from the walk by a parterre, is another parallel flower-bank, having a pedestal and statue on the ridge of the circular end. This bank encloses the small space of ground V, that may be entered from the main walk, and is intended to be set apart for the female members of the family, who, if fond of botany or horticulture, may here tend and rear their favourite plants. It is well suited for this purpose; as it is easily accessible, and yet as private as the confined nature of the ground will admit; also, from its having a portion of its surface inclining to each point of the compass, a convenient spot may be selected for every plant that will grow in our cli-

mate. If not used for this purpose, it may be made the nursery, or reserve-ground, from which the parterres and borders can be supplied with plants in flower.

w w are flower borders; and x x are wicker or wire baskets, to be filled with climbing flowering plants, such as jessamine, clematis, manarandias, roses, &c.

y y are stands; on each of which may be placed, in a pot, any of those plants which display their blossoms to the greatest advantage when allowed to hang down over the sides.

In carrying such a design as this into execution, many ideas will naturally suggest themselves for enhancing the effect of the objects I have described, and for the embellishment of the whole. This sketch must be looked upon as the outline only of the design, the detail of which yet remains to be filled up; but this I shall not attempt, as it would swell this already long description to a very tedious length, without answering any important end. The finishing touches of this, as of all similar works of art, must be given by the hand of female taste, the superior elegance of which most writers acknowledge; and the distribution of the various kinds of shrubs and trees may probably form the subject of another article. My object has been to show, that considerable variety and elegance, or even splendour, may be obtained in a confined space, at a moderate expense, by attending to the peculiarities of the site, and judiciously grouping the different useful or ornamental objects that enter into the composition. I need not enlarge upon the manner in which I have attempted to carry this into effect, as by glancing at the plan it may easily be perceived. Space I have endeavoured to give the appearance of, by preserving uninterrupted vistas in every possible direction; and splendour, by always having a number of objects of art along the sides of these vistas, and by terminating, always, with some interesting central objects, that may form a chief point to the particular view. Thus, on entering from the upper road, there will be seen, in succession, one beyond the other,—the broad walk; the steps up to the portico, with the vases on the sides; the columns of the portico itself; the arches of the cell, and its curved back, with its niches, statues, and central opening; the vestibule; the staircase; the veranda; the steps; the terrace, &c.; the whole terminated by the raised statue in the garden. Only a part of these objects will be seen at the same time, on account of the alterations of the level of the floor; but this will rather add to, than diminish, the interest, and the appearance of size; and a sufficiency of objects will always be visible together to form a very rich composition. On the veranda, the vases will form central objects at the ends. From the circular part of the terrace, past the fountain, will be seen the arcade, with its arches, niches, and statues, its ornamental tiled roof and enriched cornice, and its

doorway opening to view the whole length of the conservatory. On looking the other way, from the end of the conservatory, past some of the same objects, the fountain will form the terminating object in the grounds; but beyond it will be visible the distant hills and landscape. These, and the many accidental groupings of the objects I have supposed to be introduced, will vary with every change of position, presenting a numerous succession of views, the greater part of which, I flatter myself, would possess interesting combinations of parts, fit for separate sketches. I feel convinced that there is nothing visionary or chimerical in this plan, or that might not be obtained by a moderate original outlay, and be kept in the neatest order at a very trifling expense.

Worcester, September, 1835.

REVIEWS.

ART. I. *The Professional Practice of Architects, and that of Measuring Surveyors, and Reference to Builders, &c. &c.; from the Time of the celebrated Earl of Burlington.* By James Noble, Architect, F.R.S.A. 8vo, pp. 216, and one 8vo plate (an Elevation of the West End of St. Paul's Cathedral). London, 1836.

In order to give the reader an idea of what he may expect in this work, we give the following abstract of its contents:—

"The professional practice of architects, and that of measuring surveyors, and reference to builders; from the time of the celebrated Earl of Burlington.

"Metropolitan improvements, and reflections upon ancient architecture and its associations; and utility of the Institute of British Architects.

"Building ground; considerations for its disposition, with examples of the price per acre, as reserved rent under building leases. Importance of sewerage and supply of water, in reference to London, and a comparison with ancient Rome.

"Antiquity of brick-making; the value of brick-earth, and detail of cost in manufacture, with prices of brickwork per rod, and reference to provincial prices.

"Timber and deals; detailed calculations to regulate the price per foot.

"Valuations of leasehold and freehold house property; with observations, and mode of estimation, as hints to the young practitioner; with precedents of the value per square of warehouse stowage as annual rent, and reference to dwelling-houses.

"Contracts with builders; the requisite conditions, and description of materials in specification of work.

"The new churches; abstract from the fifteen Reports of His Majesty's Commissioners; and examples of value per square and per cubic foot.

"Public buildings; competition designs, and jobbing not modern."

At the commencement of the last century, the professors of architecture in the United Kingdom did not exceed twenty or twenty-five in number; and it was not till the time of Lord Bur-

lington, that the employment of architects "began to be systematised," and regulations introduced as to uniformity of charge whereby 5 per cent on the cost of the edifice became the established compensation to them. This included their duties and services of every nature, from the making and finishing the first sketch for a design to the complete execution of the work, and the final arrangement and settlement of the cost, and certifying and signing the various accounts. The latter, at the period in question, were made out in the respective trades, and not consolidated or merged in one individual, as is generally the case at present. (p. 11.) Variations in professional charges afterwards took place; and some architects, for example, Mr. Joseph Bonomi, in 1794, published a programme of items, &c., stating his charges when employed by the day, by the job, his travelling expenses, &c.

"Master artificers were not only distinct in their trade or calling, and invariably so employed, but also individually responsible for the due and proper execution of their respective works, at equitable and reasonable rates; but the architect and his assistants ascertained the quantities and data for, and determined the value of, the various materials and labour. Hence arose the practice of measuring by individuals, solely in the character of measurers, as a check against error by the architect, but not in respect to the value of the work: they were paid per diem, and their living and incidental expenses were all borne by the artificer or workman. The first measurer ever remunerated by a commission on the amount or value of the work was a Mr. Hele; a very able, and, it appears, avaricious individual (about 1760 to 1770), who was solely employed by workmen; but both the artificer and measurer soon discovered their mutual advantages in the encouragement of the practice applicable to speculative buildings, by a refinement in description of detail, and forcing or racking up the nominal prices of every species of work against each other in barter, and then applying those nominal prices in private undertakings; which advanced both the employment and pecuniary receipt to the measurer." (p. 13.)

Ultimately, the author observes, the surveyors getting numerous, the profession got into bad repute, and "many unprincipled measurers were frequently exhibiting in courts of law, merely with a view to bolster up and support excessive prices and claims." The system of building under contracts gave a severe check to the measuring business; "but it still continued in tolerable activity by the productions of estimates, and occasionally by the superseding of contracts, and the consequent claim of measure and value; or in the ascertainment of items and value of extras, frequently necessary from excessive scantiness in the description of works, capricious alterations, or departure from the original design; and the lamentable mistakes or errors in judgment, by some architects, as to the ultimate cost of the building, to the serious inconvenience and perplexity of the passive employer. These facts, connected with other unfavourable circumstances, justly brought into question the professional skill, as well as the moral integrity, of the architect." (p. 17.)

Architects have been accused of exceeding their estimates from the time of Vitruvius. The Greeks had a law, that if a clerk undertook a work, and spent more than the sum which, by his calculation, he supposed it would amount to, he should be obliged to make it good out of his own estate. Vitruvius, writing to Augustus, expresses a wish that the same law were enforced at Rome also; and about the middle of the last century Vanvitelli, having estimated the repairs of an aqueduct at a very trifling sum, which, however, cost 22,000 crowns, the judges ordered that he should disburse 5,000 crowns himself towards the expenditure.

"Considering," says Mr. Noble, "the extent of jobbing in England, and the period it has exercised its baneful influence, from regal or government undertakings down to those by petty parish authorities, it is surprising that more failures have not occurred, or a greater number of flagrant deviations from received opinions and true principles of taste are not presented to view." (p. 22.)

In speaking of the disastrous occurrence at the Custom House, the author has the following passage, which is one among others that might be quoted as in bad taste, and which, we have no doubt, he will expunge, or remodel, should the work come to a second edition. The *Italics* are the authors.

"If one architect failed in this work, the *quid pro quo* can be adduced, in favour of another who succeeded, and *Smirked at the job!* However, there seems to be a bias, or prejudice, against the profession *generally*, presuming to give opinions upon, and much more in its members undertaking *substratum* works, or any thing in reference to *water*, as if they were suffering under hydrophobia; that being considered *par excellence* the province and duty of the *engineer*. The latter term used to be applied to the mere machinists; an inventive class to whom this country is greatly indebted; the appellation, however, may have derived some importance and lustre, by an association of terms with the military service, and the mathematical ordeal incidental to the latter." (p. 23.)

Speaking of the degeneracy of the art of building in brick, the author justly condemns the common mode of hurrying up a brick wall, by laying the bricks on a "slight bed of mortar, generally passing over, not into, the joints below, and a small portion of it being laid against the side at the upper angle of the brick; leaving the wall full of channels and crannies, intended to be filled up by what is termed grouting;" — a composition which contains far too much water to admit of its forming a chemical union, either of its own component parts, or with the materials with which it comes in contact; and which, consequently, is of much less utility in the way of adding strength or durability to a wall than is generally imagined.

Having thus given some idea of the contents of this work, we shall lay it aside for the present; intending to take an early opportunity of resuming our review of it. In the mean time, we

can safely recommend it to architects ; as embodying a number of curious and valuable facts, some of which they will scarcely find any where else.

ART. II. *Report of the Committee of the House of Commons on Ventilation, Warming, and Transmission of Sound ; abbreviated, with Notes.* By W. S. Inman, Fellow of the Institute of British Architects. 8vo, pp. 76, two 8vo plates, and one 4to. London, 1836.

A GREAT many facts bearing on the subjects of warming, ventilating, and hearing, are brought together in this volume, chiefly from the Report, and the Evidence on which it was founded ; but partly, also, in the form of notes by the editor. The whole is included under the following subjects :—

" *Ventilation.* Various notes, historical and scientific, and extracts from the evidence of Faraday, Smirke, Brande, Birkbeck, Sylvester, and more especially Dr. Reid.

" *Temperature.* Mean temperature of the ocean and of the air. Mean temperature of London, Rome, Montpellier, Madeira, Jamaica, at the pole, and at the equator. Experiments by Blagdon, Fordyce, &c. Temperature of man. Comparative tables of thermometers, &c.

" *Atmospheric Air.* Its weight, pressure, specific gravity, bulk, expansion, condensation, absorption of heat and moisture, velocity, electricity, pleasant temperature.

" *Water.* Its weight, specific gravity, expansion, conducting power for heat.

" *Gas.* Weight, specific gravity, expansion, relative capacities for heat, of oxygen, azotic, hydrogen, carburetted, sulphuretted, and carbonic acid gas.

" *Winds.* Velocity, force, and character. Table of, dry and moist of Arabia, Africa, and China, the trade winds.

" *Rain.* Mean fall of in London, &c., effect on electricity of the atmosphere.

" *Congelation.* Line of perpetual in various latitudes.

" *Respiration.* Quantity of air breathed, capacity of the human lungs, &c.

" *Exhalation.* Quantity transpired in twenty-four.

" *Heat.* Greatest daily (and cold) in London, greatest observed in England, France, India, &c., conducting power of mercury, air, water, of a vacuum for, melting for various metals, of a coal fire, &c.

" *Combustion* and inflammation of various gases, oil, wax, tallow, &c.

" *Acoustics,* principles of, and theory of hearing.

" *Sound.* Motion, and communication of, reflected laws of, form of place most advantageous for sound and vision, confusion of speech and sound in the rotunda of the American capitol. Evidence of Brande, Reid, Birkbeck, Smirke, &c.

" *Echo.* Definition and laws of, most celebrated echoes, failure of an attempt to build so as to produce an echo, &c.

" *Plans for a House of Commons,* by Dr. Reid, Professor Brande, &c.

The young architect must now be convinced that he should not only peruse this work, but master its contents ; not only on account of the information it contains relative to the new Houses of Parliament, but for the sake of the abstract importance of the different subjects treated of, belonging to common every-day architecture and building.

ART. III. *Suggestions for Warming and Ventilating the Houses of Parliament with Hot Water in Cast-Iron Pipes; also a Variety of Facts and Experiments, and Descriptions concerning the Hot Water System as applied to Horticultural and other Purposes; showing the Causes and Remedies in occasional Failures, and the Advantages of Hot Water for producing a slow, safe, and continuous Effect, while the warming by Steam is sudden, hazardous, and intermittent.* By Thomas N. Parker, Esq., A. M. Pamph. 8vo, pp. 89. Shrewsbury, 1836. 1s. 6d.

THE great object of the author of this pamphlet, appears to be to recommend the mode of heating by hot water as best adapted for the new Houses of Parliament. He commences by stating his belief, that equal quantities of fuel will give out, in combustion, nearly equal quantities of heat, whether that heat be transmitted by steam, hot water, or smoke flues. He next goes on to show, by facts and experiments, that heating by hot water is safe, by open fire-places expensive, and by steam dangerous.

The facts and experiments brought to elucidate the subject trace the employment of steam and hot water from 1777, when both were employed at the Soho Manufactory, Birmingham, to the 23d of July, 1836, when Mr. Parker visited a steam apparatus, for the cultivation of pines and grapes, at Olive Mount, near Liverpool, put up by Mr. Walker of Manchester, according to a patent granted to Mr. Perkins. The author's conclusion is, "Praise and admiration are freely given to the powers of the steam-engine in manufactures, for locomotion, and in cases where great force or rapid movement is required; but in the more transmission of heat for horticultural and domestic purposes, the application of hot water is more suitable for producing a slow, safe, and continuous effect; while the warming by steam is sudden, hazardous, and intermittent." With respect to the advantages of heating horticultural buildings by hot water, they are undoubted; we also consider it preferable to steam in certain cases, but not in all, for heating public buildings; but for heating private dwellings we object to it, for the reasons given by our correspondent Censor, Vol. II. p. 407.

ART. IV. *A Practical Treatise on the Construction of oblique Arches, as applicable to Railways, Canals, &c.* By John Hart, Mason. 8vo, pp. 32, six large folding plates, and one 8vo. London, 1836. 6s.

IN laying this treatise before the public, the aim of the author has been to simplify the construction of oblique arches as much as possible; and he has consequently explained his plates in

language suitable to the capacities of the men engaged in the execution of them; thus rendering his work what it professes to be, a useful reference for practical men. "My own experience," he says, "in the superintendence of work and workmen has placed before me the necessity of adapting the explanations of drawings to the understandings of those engaged in their execution; for much of the value and beauty of a design depends upon the workmen being acquainted with the principles of the construction upon which they are engaged." (*Pref.*) The author is employed under Mr. Stevenson, on the London and Birmingham railway, and to that gentleman he has dedicated his pamphlet.

The plates are drawn in so much detail, every individual stone being marked, that we have no doubt whatever that the work will fully answer the purpose intended by the author. When we consider the great economy of employing skew arches, instead of rectangular arches, in crossing a river or canal obliquely, as explained by Mr. Fox, p. 251., the value of Mr. Hart's pamphlet will be obvious. It ought to be in the hands of every engineer and of every working mason.

ART. V. *Godwin, Jun., on Concrete.* From the Transactions of the Institute of British Architects, Sessions 1835, 1836. 4to. vol. i. part 1. pp. 37.

A COPY of this article has been kindly sent us by Mr. Godwin; but as it would be irregular to review it till the rest of the Volume, or Part, of the *Transactions of the Institute of British Architects*, in which it is to appear, is published, we shall only say that it is a most learned and elaborate, as well as practical, article; reflecting the highest credit on the knowledge and research of Mr. Godwin. As a specimen of what will be the contents of the *Transactions of the Institute*, it is also calculated to make a very favourable impression in favour of that body, and of their *Transactions*, when they shall appear in due form.

ART. VI. *Literary Notices.*

CRITICAL Remarks on Continental Architecture, Ancient and Modern, and on the Classical Architecture of Greece. By Joseph Woods F.A.S. F.L.S. F.G.S. This is a republication of Wood's *Letters of an Architect*, in twelve monthly parts, at 4s. each, for the convenience of students. Those who have looked into the *Encyc. of Col. Arch.*, and into the first volume of this Magazine, are well aware of the high opinion we have of Wood's *Letters*. In fact, they are quite a mine of architectural metaphysics, blended with practical knowledge. The architect, who, having read such a work, does not highly prize it, is unworthy of the name of either artist or philosopher.

Specimens of the Tudor and Elizabethan Styles of Architecture, and interior Decorations; enriched Ornaments, for Carving, Chasing, and for ancient Furniture; Ornaments for all the Uses of Manufacturers, and of Jewellery and Silverwork, collected on the Continent and in England, are now publishing in numbers, by Mr. Weale.

The Ancient Half-timbered Houses of England. By M. Habershon, Architect, is also appearing in numbers, by the same publisher.

Partington's popular Account of the Steam-Engine and Steam-Boats, with plates and cuts. A third edition of this work, price 6s., has just made its appearance in a new and improved form.

Gibbon's Manual of the Law of Fictures, price 3s. 6d., is just published.

A Catalogue of Books on Architecture and Engineering, with several Drawings and Prints collected in England and on the Continent. By John Weale, Architectural Library, 59. High Holborn. This catalogue is beautifully printed on a superior paper, and hot-pressed; and it is illustrated by a considerable number of engravings, chiefly well executed copper-plates, but partly, also, lithographs and handsome woodcuts.

All these books have been received, and some of them will be reviewed at length in an early Number.

Quatremère de Quincy on the Principle of Imitation in the Fine Arts, a work which has acquired great celebrity on the Continent, has been translated by a friend of ours, and will be published by Smith, Elder, and Co., in the course of a few days; probably by October 1.

MISCELLANEOUS INTELLIGENCE.

ART. I. Domestic Notices.

ENGLAND.

HYDE PARK Gardens.—A range of houses of the first rate, bearing this name, has just been commenced on the Bayswater Road, on the north side of that road. They will overlook Hyde Park; and between them and the public road there will be a garden common to all the houses, 150 ft. deep; and in front of each house an elevated terrace garden, 50 ft. deep. These houses will unquestionably form the most desirable town residences for the more wealthy of the nobility, of any that have been built during the present century. What will render them greatly superior to the houses in Belgrave Square, which are of equal magnitude, is the superior healthiness of the situation. When these houses are completed, all that will be wanting to render the entrance to London through Bayswater decidedly the most magnificent, will be the substitution of an iron railing for the high prison-like brick wall which, at present, forms the northern boundary to Kensington Gardens.—*Cond.*

Bedfordshire. At *Woburn Abbey*, a splendid range of botanical hot-houses are about to be erected, surpassing, in magnificence and extent, as it is said, even those of Syon.—*W. S. Amphitt, July, 1836.*

At *Wrest Park*, near *Amphitt*, *Earl de Grey* is building one of the most magnificent edifices of stone in the kingdom. It is a mansion with four fronts of Grecian architecture, adorned with the most elaborate and exquisite sculpture. (*Morn. Chron.*, Aug. 31.)

Essex. *New Workhouses* are erecting at *Saffron Walden*, *Lexden*, and *Manningtree*. From the latter place, the plans were returned to the unsuccessful candidates unpacked, and completely exposed to the curious with the descriptive particulars lost or detained. We would contrast this with the polite and gentlemanly conduct of the *Stortford Union*. The architects received their plans back after the decision, carefully packed, and each bearing a letter of thanks from the Board of Guardians.—*B. S. Bishop Stortford, July 25.*

The Church at Stratford-le-Bow is from a design by Charles Barry, Esq., in the Gothic of the thirteenth century; and we notice it chiefly to direct attention to the excellent effect produced by placing it on a raised platform. Every house, more especially in a low district of country, ought to be placed on such a platform; for without it there can be no dignity of character, with reference to exterior effect, and no commanding views of external scenery obtained from within. Had the house in Ham Park (see vol. XI. p. 684.) been placed on a platform 6 ft. or 8 ft. higher than the level of the present entrance hall, how wonderfully different would have been the effect both from without and from within! The same may be said as to Mr. Allcard's house, also at Ham; the floor of the principal story of which is 3 ft. or 4 ft. too low. — *T. Simpson. October 14. 1836.*

Kent. Cobham Hall. — This mansion, and its fine collection of pictures, the trustees of the beir have agreed to open to the public two days in the week; and this will afford a great treat to the visitors of Greenhithe and Gravesend. — *J. M. Gravesend.*

Dartford. — Alterations and additions are to be made to the workhouse at Dartford, to contain 400 persons. Plans, elevations, specifications, estimates, &c., were solicited to have been sent in by the 18th of June last, but no premium was offered. — *Typo. Wilmington Square.*

Lancashire. Wigan. — On Thursday se'nnight the large chimney adjoining the vitriol-works of Messrs. Dobb, of Wigan, fell down with a tremendous crash. This chimney was, we believe, the highest in the county, being 110 yards from the surface of the earth to the top. About eleven o'clock above half of it fell down with such force that most of the bricks were buried in the ground, and in their progress they snapped in two a beam 2 ft. 6 in. in diameter. Happily no one was injured. (*Liverpool Mercury, Aug. 21. 1836.*)

Leicestershire. Leicester. — A new theatre, on a large scale, containing meeting rooms for other purposes, from the designs and under the superintendence of Mr. Parsons, is now being erected on the site of the old theatre, in the town of Leicester. This erection is of brick, having the front faced with cement, in imitation of stone. — *Tyro. Wilmington Square.*

Northamptonshire. Thrapston. — A new workhouse, from the designs and under the direction of W. J. Donthorn, Esq., is to be erected at Thrapston. The various works were put out to contract. — *Id.*

Oxfordshire. Oxford. — *Design for the new Buildings at New-Inn Hall.* — In the forty-third number of the *Memorials of Oxford* is a woodcut, showing, it is said, the original design for a new building, recently commenced by the present Principal; which exceedingly scanty, vague, and unsatisfactory information is all that is related of it; although it might have been expected that, in a work professing to be "historical and descriptive," at least greater precision of date than the term "recently" would have been sought for, and also the name of the architect mentioned. At present we are left entirely in the dark as to these trifling particulars, and not even told whether the design actually adopted is by the author of the original one, or some other person; yet by way of amends, perhaps, for such omission, and to afford a proof of historical exactness, it is stated that a walnut tree has been cut down! Some one of your correspondents, or else the architect himself, however, will probably be so kind as to communicate what he may know respecting the intended structure: and I may here remark that it is singular that professional men should not transmit to the *Architectural Magazine* descriptive accounts of new buildings on which they are employed. Their silence may arise from modesty, but not from the most intelligible or laudable species of it. Besides the above, many other instances might be produced from the "*Memorials*," of similar dearth of information, and nearly the utter absence of critical remarks on the buildings; which is the more to be regretted, because there was ample room, in these respects, for improving upon preceding publications, supplying their deficiencies and omissions; whereas, by being

confined almost entirely to the history of the University, the work contains hardly any information that had not previously been given to the public, and by some writers more fully. Even as a graphic work, it is far from being all that it ought to have been; the plates, indeed, are beautifully executed, yet a great many of them possess very little architectural interest in their subjects, while several of the colleges are very inadequately illustrated by the few engravings devoted to them. There ought, besides, to have been a block-plan of each college or other public building; many of them being so complex, and consisting of so many courts, that it would be scarcely possible to form a clear idea of the whole of the respective piles without such assistance, even were the descriptions far more minute than they actually are. Woodcut plans of that kind might have been substituted for some of the vignettes now introduced, and which might very well be spared. When the "*Memorials*" commenced, I addressed a letter to the editor, suggesting that block-plans would be a useful, and withal novel, feature in it. However, he did not care to take any notice of my communication upon his wrapper; I therefore conclude that he did not deem it worth his attention in any degree. Nevertheless I will now throw out another hint to him, or rather to the artists, which is, that, as with one or two exceptions, they have confined themselves to the exteriors of the buildings, they have afforded themselves a very fair opportunity of bringing out a second series of the work, which should consist entirely of *Interior Views*; for which there would be no lack of subjects, the greater part of which have never been represented before.—*S. Oxford.*

Somersetshire. Bath.—One half of the North Parade has been made a carriage approach to the new iron bridge (p. 190.), by widening the outer side for a footpath; the bowling-green in front, with the gardens of the Literary and Scientific Institution, have been laid out in fanciful walks and flower-borders; and, on the other side of the river, are raised arches along the meadows to the Pulteney Road. The bridge will command a picturesque view of the hills, Pulteney Bridge, the Abbey, and various streets; and of many picturesque places on the hills.

The Orange Grove has been remodelled, the old trees cut down, and a carriage road made round the inside; the obelisk in the centre is now surrounded by a circular grove planted with shrubs.

The Abbey is thrown open by the adjoining houses being pulled down; and a fine view may be obtained from the Guildhall steps of the rich old Abbey, and the neat Gothic structure of the new St. Michael's Church, forming a striking and beautiful contrast.

The Guildhall.—In consequence of a very large meeting having taken place in the Guildhall, the floor has sunk some inches, and has been partly remedied by Mr. Manners, architect to the corporation of Bath.

St. Michael's new Church, from the designs and under the superintendence of Mr. Manners, is now being completed. It will form a structure of the light Gothic, Salisbury-Cathedral, style of architecture. At the south end of the church is an elaborately carved tower, with lantern and spire. I am afraid that some settlement has taken place in the tower; there being a large crack all down it, which has been once remedied, but has again appeared. With respect to the interior, there is not any centre aisle: the altar is placed at the north end, and has side lights: there are three galleries, with free seats at the back and sides. The vestry-room is situated at the north-east corner, with the organ over it. There is an extensive crypt, in which are catacombs for bodies. The entrances to the church are at the south-east and south-west sides of the tower, having a flight of steps to each. The whole of the church is to be faced with Bath stone, which is easily worked, and much cheaper than bricks. This new church is erecting by voluntary subscriptions, at the cost of 7000*l.* (perhaps rather more), to contain 1250 sittings, including 550 free sittings. The builder employed is Mr. David Aust.

A new Church has just been erected on Combe Down, near Bath; and a new workhouse and gaol are also in contemplation to be erected in Bath.

A number of elegant private Mansions have recently been completed, which may vie with foreign palaces, the establishment of which in a domestic way must require princely fortunes; every pleasing site being eagerly sought after for the erection of others in due time.

Bath is not only embellished with these; but in the more substantial pursuits of business, numerous places of mercantile deposits and manufacture are now being placed, perhaps the consequence of the near approach of the new railroad, in anticipation of profitable speculations. — *Tyro. Wilmington Square.*

Prior Park. — It is much to be regretted that the bishop's residence, the library, the chapel, the strangers' apartments, with some domestic offices, comprising the centre of the beautiful and celebrated mansion of Prior Park, Bath, were consumed by fire on Monday, the 30th of May last; and it is to be hoped that H. E. Goodridge, Esq., of Bath, and architect of this noble pile of building, will endeavour, in restoring it, to prevent any future accident by fire, by introducing as much cast iron in the place of timber as he can with propriety do. — *Id.*

Clutton. — A new workhouse is to be erected at Clutton, of a size sufficient to accommodate 300 paupers. — *Id.*

A Cemetery has been projected at Bath, to be established by a joint-stock company. In the prospectus it is stated, in order to afford a protection to vested interests, a mortuary fee will be paid by the Company to the incumbent of any of the parishes in, or in the immediate neighbourhood of, the city of Bath, from which a corpse may be removed for interment within the consecrated part of the cemetery. The payment of a similar fee is provided for in all the existing cemetery acts, and the amount fixed is — for interment in a vault, catacomb, or brick grave, 5s.; and in the open ground, 1s. 6d. The parties disposed to subscribe to this undertaking are, perhaps, not aware that, though such a provision was made by act of parliament, the clergy near London have modestly claimed 20s. for a vault, and 7s. 6d. for a common grave; and when this was resisted, as being at variance with what the legislature deemed equitable and proper under the circumstances, they have attempted to induce parties to enter into a private agreement to pay such sums in contravention of the law. (*Morn. Chron., Aug. 13.*)

Bristol. — A general cemetery has been for some time in contemplation for Bristol. Various plans have been proposed, but that by Mr. Massey, published in the July Number of the *Gardener's Magazine*, seems most liked. — *B. B. July 5.*

Clifton. — The ceremony of laying the foundation stone of the Clifton suspension bridge was performed by the Marquess of Northampton, on August 26th, on the Somerset side of the river. The distance between the two points of suspension will be 700 ft.; the length of the suspended railway, 630 ft.; the height above high water mark, 230 ft.; and the total width of the floor, 34 ft. (*Morn. Chron., Aug. 29.*)

Suffolk. Ipswich. — A new County Hall and courts of justice, from the designs and to be under the superintendence of Mr. McIntosh Brookes, architect, are to be erected at Ipswich; and a new workhouse is to be immediately erected in the town, from the designs and under the superintendence of William Mason, Esq., architect, Ipswich, and to accommodate 400 paupers. The various works have been put out to contract. — *Tyro. Wilmington Square.*

Surrey. Epsom. — A new workhouse is to be immediately erected at Epsom, for the accommodation of 230 paupers. Architects in this case were solicited to compete. — *Id.*

Warwickshire. Birmingham. — A new chapel, in the Gothic style, is in course of erection at Edgbaston, about a mile from Birmingham; the entire cost of which will be about 5000*l.*, which, together with the land (with the exception of a legacy of 500*l.*), is most liberally given by Lord Calthorpe.

The architect is J. J. Scoles, Esq., of London; and the builder, Mr. John Heley, of Birmingham. — *A Subscriber. Birmingham, Aug. 18. 1836.*

A handsome engraving of this chapel was sent to us, with the above notice; and if we can procure a detailed specification and estimate, with the contract for building, &c., we shall be happy to publish them at length.

Leamington. New Independent Chapel, Spencer Street.—The south front consists of a portico of four Ionic columns placed on a platform of two steps, each column standing on a deep plinth. The cornice is continued along the wings, which are each lighted by one long circular-headed window, the whole being surmounted by a balustrade, concealing the roof. The flank elevation comprises the entrances to the staircases, and the six windows on the side are simply divided by pilasters. A central vestibule affords access, on either side, to the body of the chapel, or to the staircases, which are conveniently placed in the wings. The body of the chapel is lofty, and exceedingly well proportioned. It contains, on the ground floor, side aisles and a central body of pewing, capable of accommodating 600 persons. A gallery, supported by light enriched columns, runs round the east, south, and west sides of the chapel, which will contain 470 persons; and above this, on the south side, a children's gallery is admirably contrived, which will hold 200 children, all in the full view of the minister. The pulpit, of an octagonal form, enriched at the angles with columns, is centrally placed at the north end of the chapel, having behind it three slender circular-headed windows, which are filled with stained glass. The design comprises a running oak-leaf, as a border, with rosettes down the centre of each window. The chapel is lighted by twelve windows, separated by pilasters, surmounted by a cornice, having a large single-leaved enrichment next the ceiling. This is divided into thirty panels, formed by flat sinkings, and enriched with twelve rosettes. The interior of the chapel has an extremely chaste and elegant appearance. There is a commodious vestry room, with schoolmistress's room below, and under the chapel is a capacious school. There are also catacombs for burial. (*Leamington Chronicle.*)

Wiltshire. Melksham.—A new workhouse is to be erected on a piece of ground 580 ft. by 245 ft., called Gibbs's Ground, in the chapelry of Semington, near Melksham; which is to be made large enough to contain 500 persons. Plans, elevations, &c., were solicited to be sent in by the 27th of June last, and a premium of 10*l.* was offered. — *Tyro. Wilmington Square.*

Salisbury.—A monument to the memory of that eminent physician, Dr. Maton, a native of Salisbury, has been recently erected in the cathedral there. The style of the monument is the florid Gothic; and it is the production of Mr. Osmond, of that city. — *Id.*

Worcestershire. Worcester, July 3.—Our Natural History Museum is so nearly finished that a public breakfast was given in it last week. The County Courts proceed slowly, owing to the funds being deficient. The building of the new church in the Blockhouse, and the repairs of the cathedral and of St. Helen's are also in progress. — *R. F. Worcester.*

ART. II. Retrospective Criticism.

DESIGNS for the new Houses of Parliament.—Much contention and dissatisfaction has arisen, in consequence of the decision of the commissioners appointed to select the designs for the new Houses of Parliament. That their decision in respect to the three minor prize drawings is a puzzle to all, there can be no doubt; but that there should be any doubt about Mr. Barry's design meriting the first prize is equally puzzling. I will admit, for the sake of argument, that Mr. Barry's plan is not the most convenient; also, that it has very many faults which the other plans have not; but what liberal man will say Mr. Barry's elevations and sections are not very superior to any of those

exhibited in the National Gallery. The commissioners were satisfied that Mr. Barry's design showed marks of genius which the others fell very far short of; they were also satisfied that, in all the other designs, the general arrangement would require very considerable alteration; therefore they very properly and justly awarded the first prize to Mr. Barry. But this does not satisfy some of the competitors, who surely are not jealous of Mr. Barry's success, or are they disappointed? This last is generally supposed to be the case; particularly since they have petitioned the Houses of Parliament, and had two plans of Mr. Barry's design lithographed, one of which shows his first design, and the other his design as altered by the *direction of the commissioners*. Now, let me ask any disinterested competitor, if it is just to accuse Mr. Barry for what he is in no way answerable (for the petition accuses him)? Would not any of the other architects have done the same thing when directed by the commissioners? In fact, would they not have found it necessary to make many more important alterations, not only in the plans, but in the elevations and sections? For, upon a close and impartial examination of the whole of the designs, there can be very little doubt remaining as to which would require the least alteration, so as to retain its general character. If Mr. Barry's plan has been improved by the alterations suggested by the commissioners, surely this cannot be an offence; or would the dissatisfied competitors say that no alteration should be made after the design was first chosen? I would even allow him a greater latitude; for I look upon a competition principally as a trial of skill to ascertain which possesses the most real merit. Almost any person who has a knowledge of what is required in a public building to be competed for, may arrange a plan conveniently; but can any man produce elevations and sections, possessing all the characteristics of the style of architecture he is confined to? Certainly not. Look around the exhibition, and then say which design has the most merit, the most originality, and the boldest and noblest ideas. Mr. Barry's design is not perfect, I am well aware; but is he not to be allowed an opportunity of making it so? I would permit him to make a perfectly new design; ay, and if all the discontented were to try again with him, I have not the least doubt that he would produce far nobler compositions than any of them. What would another competition do? Certainly it would produce better designs; but Mr. Barry has had the same opportunity of seeing all the designs as the rest; and if they have improved ideas, can we suppose that he has not. All the faults they have pointed out in his design, he would then, of course, have an opportunity of correcting; besides others, which, perhaps, he has only seen himself. I do not defend Mr. Barry because his design has no faults, for there are many, some of which I have before mentioned; I defend him because I consider that he has been unjustly attacked, and by some who ought to have kept in the background, as their designs are a disgrace to their names. Even if there were any hints to be obtained from the exhibited designs, which might improve Mr. Barry's, he ought to have the advantage of those hints; in fact, every assistance should be afforded him by the profession, rather than every voice (at least many voices) being raised against him. This is not the way other professional bodies act; why then should architects, who belong to what is generally esteemed a liberal profession, act so contrary to the general amity which ought to govern a liberal art?

With respect to the estimate, I hold that Mr. Barry has decidedly erred, as the building will never be erected for the sum he states: but his opponents have erred equally; for they, eager to get the prize, have affixed a price to theirs which it is utterly impossible the buildings can be raised for. This, I am sorry to say, is a common practice with many of the architects of the present time: but it is a mistaken notion; for if they succeed, the error must be discovered when their plans are carried into execution; and then it is not the one individual who is blamed, but the whole profession is slandered.

Since writing the above remarks, the exhibition has closed; and it is much to be regretted, that an exhibition, which forms such an interesting epoch in

architecture, could not be closed in perfect amity; much may be said on both sides, but I still think the petitioners to blame. They were the aggressors, and the other party were obliged to take up the cudgels in their own defence. A short time, I trust, will dispel the angry feelings which were displayed by both parties; and in the meantime, the exhibition has certainly had a beneficial effect on the public taste; and it has placed architecture on such a footing, that not only will the Houses of Parliament be the seat of the laws of the country, but they will be the foundation of a rapid rise in British architecture, beyond all other nations.—*B.*

Mr. Thompson's Designs. (p. 178.)—Mr. Thompson is rather unfortunate in his reference to the article on Architectural Pedantry; and I think, if he again reads that paper with attention, and call to mind the numerous designs lately exhibited at the National Gallery, he will probably be able to discriminate between a servile application of rules, and no attention to them at all. I have not now Mr. Thompson's work before me, but I can perfectly well recollect the deficiency of light in the rooms (17, 18, 19, and 20); and though he may think it quite unnecessary to have light where dusty, old, and perhaps partly obliterated papers are to be examined, architects generally consider that offices require to be well lighted.

Mr. Thompson appears to make a great merit of being a "mere working carpenter," and perhaps considers that this will screen him from any reproach he may incur as an interloper in a profession that he evidently does not understand; but his being a "mere working carpenter" is only so much against the production of a work which he does not pretend to have any knowledge of; and as his work is launched into the world as an architectural production, he must expect to meet with architectural criticism. Much as I approve of all working men gaining knowledge in every art, it would be monstrous indeed if they were all to be set down as professors. I trust Mr. Thompson will take a proper view of my remarks, as they are not applied with the least ill will towards him, but merely with a desire that working men should become perfectly acquainted with an art (particularly one so very intricate as architecture) before they venture to become professors.

Mr. Thompson, in his own observations, proves how little he is acquainted with Gothic architecture; he says, "I have endeavoured to avoid, as much as possible, the appearance of either ecclesiastical or castellated architecture; and, on this account I have been sparing in the introduction of mullions, and also of battlements." He adds, that his principal aim was to obtain originality; but how miserably he has failed! For he previously asks, "what is the objection to an oriel window, 10 ft. wide, uninterrupted by mullions?" "is it because it has never been before executed, that it is considered objectionable?" I must now tell Mr. Thompson, that the introduction of mullions and battlements does not necessarily give a castellated appearance; but that the mullion in Gothic architecture is one of the most important features, without which windows would become mere holes in the wall: and again, by having such a variety of widths between the mullions, the whole of his composition becomes discordant. To produce a harmonious whole, unity must be studied in its parts; therefore, to obtain this unity, all the openings between the mullions should be nearly of the same size; and if one is 10 ft., the others should be nearly so. I do not object to this window, because it has never been built so before, but because it does not in the least appear to belong to a building where all the other windows are crowded with mullions. As to his avoiding ecclesiastical character, here again he has failed. What has he done? Merely increased the dimensions of the general outlines of church windows; in fact, he has copied the transept of some one of our cathedrals, where one gigantic window occupies the whole front, from the plinth to the top of the gable. He has not only taken this general idea; but for the purpose, as he imagines, of giving a totally different character, he has made the mullions 5 ft. apart,— "a greater width than has ever been executed." By this contrivance, he has not only got a large cathedral window out of its place; but, by preserving this

ancient form, he makes the peers enter through a window. The introduction of battlements does not necessarily give a castellated character; for they were not only used as decorations to cathedral parapets, but also to pewing (or stalls), light oak screens, cornices under roofs, and even pulpits and fonts; and as, when they were so used, their character was in a great measure altered by the introduction of light tracery, they could not be considered inappropriate, particularly as their form contributed so much to the sparkling effect and pleasing character of the composition in which they formed a part. Another reason for their introduction is, that they were part of heraldic blazonry. The battlements for defence are of a massive and totally different nature. One word or two more on the originality which Mr. Thompson is so desirous of producing. In my opinion, originality requires total alterations, at least in the general forms and large features of a building, more than in the minor details; for it is masses of composition which produce the great effects, with a proper or harmonious distribution of the lesser parts, as they are always subordinate, and it is their united force only that can produce an original, harmonious, and effective composition.

With respect to the perspective views, I am only surprised that, as Mr. Thompson could draw these views so well, he did not draw his elevations better. I am not the only person who has made this observation.—*B.*

ART. III. *Obituary.*

DIED at Alexandria, on July 3., *Gnlloway Bey*, much regretted and universally respected. This young man was the second son of Alexander Galloway, Esq., the eminent London engineer, no less distinguished for professional abilities, than for his public spirit and liberal sentiments. Galloway Bey had devoted his great talents and energies to the service of the Pacha of Egypt, as his chief engineer, for the last twelve years; and as a reward for these services, two years ago, he received the above distinction, which, when viewed as conferred on a Frank, and so young a man, was considered a high mark of esteem, which he, however, richly deserved, not only for his professional talents, but for his extreme kindness, generosity, and urbanity of character. He only left England in February last, for the purpose of carrying into effect the gigantic work of directing the execution of the railroad from Cairo to Suez, for which he came to this country to make all the arrangements, on behalf of the Pacha, with his father and brothers. It is stated that his disease was caused by a liver complaint, occasioned by the climate, which, upon a *post mortem* examination, was fully confirmed. We feel that we and the public owe a debt of gratitude to the memory of such men as Galloway Bey, who advance the science and enlightened views of England in such countries as Egypt was; and we are sure his family must feel some consolation, in knowing that he had rendered such services to so many of his fellow creatures. His remains were temporarily interred at Alexandria, and the whole respectable population of that city may be said to have attended to pay their last tribute of regard. The Pacha and his minister, Beyhas Bey, in their letters of condolence to the family, have expressed that the Bey's services to their country could never be forgotten by them. We are happy to learn that the railroad will still be carried into effect, and that the executing of it will now devolve upon the Bey's brothers, two of whom are in Alexandria. The Bey's illness is the cause why this work has not as yet been commenced; but we understand that all the arrangements are now made for enabling the brothers, with other assistance, to carry it on with full effect. (*Morn. Chron.*, Aug. 18. 1836.)

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ORIGINAL COMMUNICATIONS.

ART. I. *On the Difference between Contrast and Opposition in the Fine Arts.* Translated from the French of M. QUATREMÈRE DE QUINCY. By P.

THE word Contrast is generally considered synonymous with Opposition; but, like other synonymes, the two words convey different ideas, both in their etymological and their common acceptation. It appears to us that between the meaning of these two words there is the same distinction as between contrary and different. Every thing that constitutes Contrast doubtless includes the idea of Opposition, inasmuch as the greater contains the lesser; and it is equally undeniable that, when we use the word contrary, we convey the idea of a difference. The idea of Opposition, both in nature and the imitative arts, indicates a position, whether between animated beings or the works of man, which is calculated to bring out and distinguish the separate qualities of two distinct objects, which may be equal to each other, though quite different. The idea of Contrast, on the contrary, implies such a decided hostility between two objects as to make one of them appear evidently inferior to the other. Thus, we may place the advantages of a residence in town in *opposition* to those of a residence in the country; but we draw a *contrast* between a good man and a bad one.

The art of painting is that which will best explain to us the precise value of the words Contrast and Opposition when applied to the fine arts. Painting, when considered only as the technical use of colours, exists solely by virtue of Opposition. What are tints, semi-tints, shades, and gradations of light, but points of opposition, the almost infinite variety of which is occasioned by the attempts of art to imitate the effects which nature, in a manner peculiar to herself, displays in every object in creation, and in each of the different parts of such object. These wonderful effects are produced by the numerous points of opposition which the art of the painter enables him to draw from

very few colours : and these points of opposition, as every one knows, consist of combinations of scarcely perceptible differences of light and shade, clearness and obscurity, strength and weakness.

Painting, however, is not confined to this mode of imitating nature : it can address itself not only to the eye, but to the mind ; and it can copy not only the minute gradations of colour, but those bold and striking effects, which alike dazzle the senses and excite the imagination. For instance, when an unexpected change is introduced, from a smiling landscape to a wild and savage country, interspersed with threatening rocks ; when forked lightning is made to furrow the horizon ; or when the flames of a volcano, or of a fearful conflagration, glare through the darkness of night : these are what are called contrasts in nature ; and these can never be produced in painting by gentle transitions of shade, deepening by almost imperceptible degrees from light to darkness ; but by sudden, bold, and vigorous changes, and by using colours which afford the greatest and most striking contrasts to each other. The power of producing contrasts is one of the advantages that painting has over sculpture ; which, from its nature, is incapable of Contrast, and admits of only very slight Opposition, and which, in this particular, stands alone. This appears to us the easiest and clearest mode of explaining the distinction between Opposition and Contrast.

The same distinction between Contrast and Opposition which is found in painting exists in all the other fine arts ; but, of course, it is most conspicuous in those arts which operate most forcibly and directly on our senses. Thus music, which cannot exist without Opposition, since it consists of a succession of different tones, *opposed* to each other, can also display, when necessary, the most striking contrasts. It can pass suddenly and abruptly from the faintest sounds to those resembling thunder ; and, when employed to express the moral affections, it can glide from the expression of the softest sentiments to the noisy *contrast* of the most stormy passions.

Poetry also consists of alternations of Opposition and Contrast ; Opposition, produced by a succession of images, which, though all are of similar nature, are yet different, and so arranged as to display their points of difference sufficiently to avoid monotony ; and Contrast, produced by bold and striking combinations of images, evidently and clearly distinct.

The effect of Contrast is, then, to carry the mind suddenly, by an unexpected impulse, to the enjoyment of an impression of astonishment ; which, being powerful, ought neither to be of long duration, nor frequently repeated. Reason and a feeling of propriety can alone fix the limits within which every principle applied to the fine arts must be confined ; and these limits vary with different kinds of art. Every artist has, indeed, a

theory of his own on this point; and, as each may choose his own method of working on the minds of others, principles which are common to all the fine arts are liable to such changes and modifications in their application as to render them of little effect. Some artists, indeed, do not allow the introduction of Contrast at all into their works, though they admit of the necessity of Opposition; as they assert that contrasts ought to be confined to those arts which, expressing themselves by images, seize on our affections, and, exciting our imaginations, make our thoughts fly rapidly from one place or feeling to another.

Architecture is certainly less capable than any other art, except sculpture, of exercising this power; because it addresses itself chiefly to the understanding, and acts more upon the intelligent than the sensitive faculty of the mind. It pleases us by the correctness of its relative affinities, by the rational combination of its forms, outlines, masses, and proportions; and the agreement of all the parts with each other and the whole. Our gratification in this arises from our judgment, our reasoning powers being first called into action. The kind of admiration excited resembles that arising from a general survey of the works of nature; and the impression is that of order. Now, order can never produce strong and sudden emotions: these are the effect of surprise and contrast.

It is clear, therefore, that architecture ought to make more use of Opposition than of Contrast in its mode of employing a variety of dimensions and projections, alternate simplicity and enrichment, and the proportion, weight, lightness, and other qualities, which constitute, as it were, the melody and rhythm of its language. It is by innumerable degrees of opposition, and slight shades of difference, that it is enabled to produce in its edifices that harmony and that character which lead the mind to entertain a feeling of rational admiration; a feeling totally different to that of astonishment, the merit of producing which belongs to Contrast.

We do not intend to infer that architecture does not possess resources and means enough within itself to enable it to produce objects differing sufficiently in construction and form to display the effect of Contrast, when brought into contact with each other: all that we maintain is, that the true spirit of architecture can never consist in abrupt approximations. For instance, what a transition it would be, to pass suddenly from the elegant and costly decorations of an Ionic interior to an underground tomb, hollowed out of the rudest materials: such a contrast as this is neither suited to the place nor to the purpose.

Contrast, in architecture, can only belong to the decorations of some interiors, or to scenic representations; which, not only in idea, but in reality, are constantly shifting every moment.

An illustration of the true and genuine effect of Contrast, in architecture, may be met with in the palace of T , at Mantua; in the sudden and unexpected transition from an elegant gallery to the celebrated hall painted by Giulio Romano, representing immense masses of rock falling upon and crushing the giants. Examples might also be quoted, from several religious edifices, of decorative illusions, causing the darkness of the tomb to be succeeded by the brightness of day. These are contrasts, which, if desired, may be introduced into architecture, but not by means of its own attributes. It is the same with respect to the theatre. Nowhere can a better representation be given of the opposite characteristics which an architect may bestow upon a prison, a tomb, a cenotaph, a temple, a ball-room, or a banqueting hall, &c. But it is on the stage alone that such erections can be made to figure in contrast.

ART. II. *Essay on Beauty in Architecture.* By MR. FREDERICK LUSH.

WE cannot arrive at a knowledge of the true essence of the beautiful, in any work whatever, without "first thinking of its end and design, and then, of course, examining the propriety of its parts in relation to this design and end." (*Blair's Lectures: Beauty.*) If this observation holds good relatively to the works of nature, it does so equally with regard to most of the works of man, and more particularly to architecture. In this art, more than in any other, Beauty must be combined with fitness, to give satisfaction, even to the eye. For example, if the basement of a building appear insufficient to bear up the superstructure, or the thrust of incumbent parts, or if its slender piers seem liable to yield to the weight of materials above, no accompanying ornaments, however pleasing they may be in themselves, can ever counterbalance the neglect of that fundamental principle of fitness, which ought to be the foundation of all that is beautiful in architecture. A due sense and regard for this fitness and propriety in design regulates and has a remarkable influence over our ideas of taste and beauty. As utility springs from necessity, so Beauty has its origin in principles and natural causes. However great the pretensions of a building may be to an architectural character, yet, if its ornaments be allowed to interfere with this essential quality, it loses its beauty, and displeases the eye as much as the greatest deformity.

Twisted, or spiral, columns are ornamental; yet, as they appear to indicate weakness, they lose their characteristic expression of ornament when seen supporting a heavy entablature,

which requires props possessing strength. Other ornaments prove alike objectionable when they are misapplied, and show a total want of propriety.

Fitness and propriety, then, may be considered as the most material, or fundamental, principles of Beauty in architecture; but they do not comprise all that is required on the subject. Much of the beauty displayed in buildings depends upon the form of the plans on which they are erected: but there must be many other causes cooperating to render them beautiful to our senses. A circular building, forming an harmonious composition of parts, with its columns, entablature, and whatever other ornaments may be introduced, continued all round it in regular succession, being best calculated to raise the mind and afford pleasure to the imagination, is of all others the most beautiful. It is the uniformity and succession of parts, in this instance, which produces the beautiful; and, for this reason, the ancient heathen temples, which were frequently round, or of some other regular form, and adorned by a range of uniform columns on every side, have gained the admiration of all posterity. From the same cause, also, a regular continuation of arches, or rows of lofty clustered pillars, such as those which are placed down the aisles in some of our old cathedrals, cannot fail to excite ideas of the beautiful. A collection of similar forms, arranged in regular order, gives the idea of design, and, consequently, of Beauty; but it is obvious, that, were these same forms placed together without any order or expression of design and character, the beauty would be no longer apparent, and that we should consider the production merely as the work of chance.

Of all figures, those in which there is uniformity combined with variety are the most likely to excite in the mind the ideas of Beauty: but agreeable conceptions of objects may arise from other distinct properties, which are more or less pleasing to the imagination. According to the compound ratio of uniformity and variety is the beautiful in objects; for, where the uniformity of bodies is the same, or equal, the beauty is as the variety, and *vice versâ*. Now, if we compare the different kinds of bodies which we meet with in regular figures with what is found to extend through the more complex species of substances, we shall prove this to be an axiom. It has been already observed, that a circular building exceeds every other in point of beauty: but this can only hold good where a circle was intended; and it cannot be asserted, that the nearer any polygon approaches the circle, the more beautiful it is; for, when the number of sides is much increased, the proportion of them to the radius of the circle to which they belong is so small, that they lose the beauty presented by a succession of equal surfaces, without acquiring

that of the continued surface of the circle. It follows, therefore, as a deducible truth, that regular solids, having an equal number of plain surfaces, rank next to circular bodies in regard to Beauty, because they please the eye by a succession of regular forms, and create ideas of symmetry and completeness among the parts.

Regularity is one great source of Beauty, on account of its suggesting the ideas of fitness and propriety, which have always a greater connexion with orderly and well-proportioned forms, than with those which appear not constructed according to any certain rule. Regularity would, however, degenerate into monotony, if it were not relieved by variety. This quality owes its power of creating Beauty to the judicious or injudicious manner in which it is contrasted with its opposite property. No one would affirm that a poem which indicates a want of variety in cadence was either beautiful or musical. In like manner, a building which presented the same unvaried appearance throughout would so completely tire the eye, that we should find it impossible to call it beautiful. Such a building would resemble a barren moor or sandy desert, where nothing offers itself to gratify the mind of the beholder, or break the wearisome uniformity of the scene.

The necessity of unity of design in a building is too obvious, and has been already much too often discussed in this Magazine, to require to be treated upon at length here: but it may not be out of place to cite a passage from Burke's *Essay on the Sublime and Beautiful*; the ideas expressed in which, on this point, perfectly accord with my own. He says, in explaining the theory of the subject (part iv. sect. 10.), "The mind, in reality, hardly ever can attend diligently to more than one thing at a time: if this thing be little, the effect is little, and a number of other little objects cannot engage the attention: the mind is bounded by the bounds of the object; and what is not attended to, and what does not excite, are much the same in the effect: but the eye, or the mind (for in this case there is no difference), in great uniform objects, does not readily arrive at their bounds; it has no rest whilst it contemplates them; the image is much the same every where: so that every thing great by its quantity must necessarily be one, simple, and entire." For this reason, a great building should be uniform in all its parts, and not be charged with ornaments too diminutive for its scale. The beauty of a small cottage consists in the simplicity of its general details, and in the contrast formed from the combination of various figures. But, in combining these component parts, unity is very capable of being maintained.

Symmetry and proportion must also be allowed to form component parts of Beauty. What is it that produces the beautiful in many works of antiquity, but their elegant proportions? As

the beauty of the human figure results from the relation and mutual adaptation of every part to the whole; so, in an edifice, the correspondence and relation of parts to each other constitute that symmetry and harmony which is ever beautiful, and pleases the eye.

Intricacy is caused when a regular row of arches, or a colonnade, is broken by a portion projecting or receding from that row; or the introduction of a different ornamental feature, which gives a new and unexpected effect of light and shade. Considerable beauty may be produced by this quality in a single building, surrounded with picturesque scenery, or where a detached building unites in general effect, though remotely, with others similarly placed. But, with regard to a street in a city, it may be questioned whether this quality is applicable; for, where one system, style, or character is preserved throughout, as is generally the case in rows of houses, the heights of the several chimneys, and other prominent masses, ought to be in like manner equal. Hence, Beauty assumes a different character in towns to what it does in the country; since there we admire the irregularity in the form, position, and other parts of a building, because we perceive its beauty harmonising with the surrounding objects.

Colours, in buildings, have a great effect in pleasing or displeasing the eye; and they may be classed under four general heads:— 1. the cold, such as green, blue, violet, &c.; 2. the warm, such as red, orange, scarlet, purple, &c.; 3. the gay, or simple, such as white; and, 4. the gloomy, or dark, such as black. Nature has pointed out to us, in several ways, the colours which form the most agreeable and alluring compounds to the human eye; and teaches us that all vivid and intense colours should be used with a sparing hand. The direct union of two opposite colours is not only very far from being harmonious, but will never agree, like two discordant notes in music.

Nothing can be more discordant than to see glaring red tiles on the roof of a large stone building, or on one, the surface of which is intended to represent stone, moulded into elegant forms. On an ordinary dwelling-house, or small brick cottage, red tiles may be allowable; and their effect, when mellowed by the hand of time, is harmonious: but the contrast between the harsh red of the tiles and the polished stone of the walls of a large public building is so strong, that the beauty of the latter becomes lost, or greatly depreciated. Again, if we suppose an edifice entirely black, it is evident that we should not so readily distinguish in it those contrasts of light and shade, which are so striking in one of pure white stone; and, consequently, that a considerable portion of the effect intended to be produced by the design of the building would be destroyed.

The beauty of form and position in different bodies is determined by the shape and support which it is required that they should receive, in order that the centre of gravity may remain stable.

In architecture, no objects can be more offensive to the eye than a wall that is not quite upright; a pillar leaning from its base; a column apparently unable to support the weight applied to it; or a very tall narrow chimney surmounting a low house. On the other hand, how beautiful is an edifice constructed with the orders in suitable succession, from the massive Doric in the basement, supporting the weight of the whole mass, to the light and elegant Corinthian above, combined with other forms, equally expressive of richness and delicacy! Observe, also, a fabric, in which the chief characters aimed at are plainness and stability in the basement, increasing in richness the higher it rises, till the crowning portion goes off against the sky with a feathery lightness and delicacy. It is like the tree, whose thick and stable trunk throws around it on every side heavy branches, gradually diminishing in thickness, till their extremities become so attenuated, as to wave to and fro with the gentlest breath of heaven!

The Chinese pagoda is a fine example of the union of certain requisites for stability; namely, perpendicularity and expanding base, with other qualities which contribute to render it worthy of notice. When seen springing up from the centre of a wooded island, or other equally delightful spot, it presents, perhaps, one of the most beautiful objects which fancy has ever portrayed.—*July 4. 1836.*

ART. III. *A few Remarks on the Effects likely to be produced from giving the Middling Classes of Society a Knowledge of, and Taste for, Architecture; and on its being a fit Study for the Ladies.* By W. P. GRIFFITH, Esq.

ALTHOUGH there are as many different opinions on the subject of giving the middling classes a knowledge of architecture as there are on many others, yet, I think, few can deny that the probable result of such knowledge would be the general improvement of our domestic architecture; and that it might eventually, also, lead to a much greater encouragement of the fine arts. At all events, the employment of architects would be much increased; and, as it is by practice only that we can hope to attain a good taste, there is very little doubt of our ultimately arriving at it.

It is well known that, by the officiousness of parties who sometimes have the management of erecting public buildings, the original intentions of the architect are often nearly, and some-

times completely, destroyed, to please the whims and fancies of these directors. Now, if these interferences were made by persons who had acquired some taste for the art, let that taste be ever so small, professional men might benefit by their suggestions.

The importance of possessing a knowledge of architecture is, by many persons, never perceived until they are called upon to exercise an opinion on the subject; and yet there is scarcely any one who may not be solicited to join a committee to decide upon the merits of architectural designs for schools or other buildings connected with the parish in which he resides. The deficiency of persons often put upon these committees is pretty well known, and more especially by those architects whose drawings have unfortunately happened to fall into their clutches.

The best means of remedying these evils is by putting into the hands of all classes, but more particularly of the middling classes, such publications as your *Architectural Magazine* and *Encyclopædia of Cottage, Farm, and Villa Architecture*; by which persons would be much sooner induced to take an interest in the subject than by recommending to them more expensive and complicated works, which would tend more to dishearten than to please them.

To builders, carpenters, and others concerned with buildings, a knowledge of architecture is as necessary and useful as that of carpentry is to the architect. Carpenters ought to be well acquainted with architecture, and more particularly with the formation of mouldings; so that, in case they were ever called upon to execute any thing, under their own superintendence, they might show a little taste. By these means, in the course of time, our London shop fronts would present a very different appearance to what they now do, and, upon the whole, our domestic architecture would be much improved; and, instead of interfering with professional men, it would often be the means of preventing the misunderstandings that take place between them and builders and carpenters, through the ignorance of the latter on the subject of architecture.

As a study for the ladies, nothing can be more interesting than that of architecture: it could not, in any respect, injure their health, as with them it would not be a matter of gain. By a little perseverance on their part, attended with a degree of nicety and care, which very few ladies are without, architectural drawings could soon be accomplished; and this art, when once acquired, would be an endless source of amusement to them: one friend would recommend it to another; and, in the course of a very short time, instead of architecture being considered as a study for the few, it would be one for the many; and, if the fine arts did not thrive under such auspices, they certainly never would under any other.

In conclusion, having been induced to offer the foregoing

observations for the purpose of endeavouring to impress upon the minds of all the importance of possessing a knowledge of architecture, if I shall be so fortunate as to succeed in persuading only a few to take up the subject, I shall be delighted to think that I have conducted towards obtaining the long-wished-for successful result. — *London, 1836.*

ART. IV. *Observations on the Average Cost, per Sitting, of Five Churches and Three Chapels, lately erected in the Neighbourhood of London.* By W. S.

A NUMBER of new churches and chapels having been lately erected in London, and a number of others being in progress, I have thought that the following table of the average cost, per

Table showing the Average Cost, per Sitting, in Five Churches and

	Names of the Architects.	No. of Sittings in Pews.	No. of Sittings in Free Seats.	Total No. of Sittings.	Total Cost.
<i>Names of Churches.*</i>					
St. Anne's, Wandsworth	Sir R. Smirke	426	1332	1758	14,600
Bermondsey Church † -	Mr. Savage -	800	1200	2000	21,000
Norwood Church - -	Mr. Bedford -	470	942	1412	12,400
Brixton Church - -	Mr. Porden -	642	1284	1926	15,200
Kennington Church -	Mr. Roper -	666	1332	{ about 2000 }	15,300
<i>Names of Chapels. ‡</i>					
New Chapel in Bishops- gate Parish - - - }	Mr. Meredith	400	800	1200	5200
St. Mary's, Lambeth -	Mr. Bedford -	613	1347	1960	7600
St. James's, Clapham -	Mr. Vulliamy	800	450	1250	6500

* The whole of these churches are built with stock-brick walls, faced with Suffolk white bricks, and stone dressings to the windows, doors, &c.; the greater part of the towers are also cased with stone. All of them have galleries; and the pews are of deal.

† The interior of this church is much richer in design than any of the others; and it has a clere story supported by Ionic columns, with a paneled ceiling; which accounts for the average cost per sitting being greater.

‡ All of these chapels have galleries; but they have no clere story. The pewing is of deal.

sitting, in eight newly built churches and chapels, might be interesting to your readers.

A great item in the cost of the churches is the towers ; and it becomes a question worthy of some consideration, whether, in the Grecian style, it would not be as well to leave them out altogether, as, by that means, a great saving would be effected ; and, in some instances, a great improvement. It cannot be said, that, in any of the above churches, the towers are an ornament to them, nor can it be said that they are of any important use : consequently, it is to be regretted that architects, who have to build churches in the Grecian style, are not allowed to imitate more closely the Grecian temple, by having columns at the sides in lieu of towers ; as such buildings would, at least, be bold, chaste, and uniform.

Three Chapels, lately erected in the Neighbourhood of London.

Average Cost per Sitting.			Remarks.
£.	s.	d.	
8	6	0	In the Grecian style, with a portico and tower.
10	10	0	Grecian, with an Ionic portico of 4 columns, vaults, and a tower.
8	15	6	Grecian, with a Corinthian portico, vaults, and a tower.
7	18	0	Grecian, with a Doric portico of 4 columns, vaults, and a tower.
7	13	0	Grecian, with a Doric portico, vaults, and a tower.
43	2	6	+ 5, which gives a mean average of 8 <i>l.</i> 12 <i>s.</i> 6 <i>d.</i> for each sitting.
4	6	8	{ Gothic style, with a small bell turret, and vaults. The windows are plain, having only stone mullions and jambs, and no tracery heads ; but the whole is faced with Suffolk white bricks ; and about 300 <i>l.</i> was expended in extra foundations. { Gothic style, with a small turret, and stone spire, and vaults. The windows have tracery heads ; but the walls are only faced with common bricks. { Gothic style, with a small tower, spire, crocketed pinnacles, and vaults ; the windows having tracery heads. The whole of the walls, tower, &c., are of common brick, covered with cement, in imitation of stone ; and the timbers of the roof are filled in with richly carved tracery. This chapel, it will be observed, has a much larger proportion of pews.
3	17	6	
5	4	0	
13	8	2	+ 3, gives a mean average of 4 <i>l.</i> 6 <i>s.</i> 8 <i>d.</i> for each sitting. The mean average of the first two is only 4 <i>l.</i> 2 <i>s.</i> 1 <i>d.</i>

Most of the above churches and chapels were erected about eight or nine years since ; and I think similar ones could now be erected for at least from 5 to 8 per cent less.

London, December, 1835.

ART. V. *Candidus's Note-Book.*

Fasciculus I.

I. THE advice I would give every young architect (and, how much soever they needed it, none else, I suppose, would condescend to accept it) is: Always go about with your eyes open; that is, your professional eyes: employ them every where. By this means, you may pick up many very useful ideas and hints, which you have no chance of meeting with any other way. Standard productions and works of celebrity cannot be missed: the Parthenon and the Pantheon, St. Peter's and St. Paul's, require no direction-post to guide you to them. But there are a thousand other things which both books and professors consider it quite *infra dig.* either to point out or refer to. In all probability, you will never have to erect a cathedral or a palace; therefore do not prepare yourself too exclusively for gigantic projects, but set about acquiring betimes a store of that kind of invention generally available; and for which, as it is never taught, every one must be his own instructor. Whatever is uncommon, note, let it be ever so bad; and, by so doing, ten to one but you detect that, by different management, something very good might be made of it: at any rate, you will have a useful lesson, since you will see what ought to be guarded against. Many an ingenious contrivance and expedient has been devised for some particular occasion by a village carpenter. Do not on that account sneer at it; at least, not before you are certain that you yourself could have hit upon something much better. Perhaps it may be unsightly and uncouth. So much the better: you will then have an opportunity of exercising your taste, by transforming it into finished elegance, without any one's suspecting the source whence you derived the idea. Even as regards decoration, you may find many things, quite trumpery and contemptible in themselves, capable of furnishing a good idea, which you could get nowhere else. What was originally a blunder, may be improved into a beauty. Note, also, all accidental effects; for you may, at some time or other, be able to bring them into a design, and turn them to account. I remember one day passing through an alley somewhere in the City, expanding into a small court with another passage beyond it, where there was a flight of steps. The effect of light and shade, and the arrangement, were highly scenic and picturesque. What a charming vestibule might be shaped, thought I, out of this!

II. How I do detest houses in which people are born! that is, views of such as are represented on account of no visible interest of any kind they possess, but merely because some individual of note happens to have come into the world within their

walls: and, after all, we are left to conjecture in what particular room the event took place. This very trumpety sort of superstition is carried to a most ridiculous excess by *illustrators*.

III. The expediency of appointing professional men as the fittest judges in competitions for public buildings has been questioned, and is very questionable: undoubtedly, there might be some advantages attending such a practice; yet I do not think they would be sufficient to counterbalance the inconveniences which would result from it. That an architect would not select a design with glaring defects, may be taken for granted; but that he would earnestly recommend any one strongly marked by originality and genius is exceedingly doubtful indeed. What he would chiefly look to would be technical merits; nor would he be likely to desiderate extraordinary ability of any other kind. Can we believe that Mr. Nash, for instance, would have sanctioned with his *ædificetur* any thing affording an injurious comparison with his own precious Buckingham Palace? or that —, the most commonplace, barren, and frigid putter-together of Greek columns or Gothic windows, would be accessary to the putting an extinguisher upon himself, by giving the preference to a design fraught with taste and imagination, and showing a masterly conception of the subject? If any one can suppose this, he must be exceedingly easy of belief. No: it is better, upon the whole, to entrust decision, in such cases, to persons who, while they are capable of discerning excellence, must be exempt from the suspicion of entertaining any jealousy of it. But no such persons, it will be, or rather it has been, said, are to be met with. That is certainly an awkward matter, yet, at the same time, attended with one mitigating circumstance; because, supposing such to be really the case, and that no other class of persons than practitioners can fairly judge of the niceties of the art (not only its more obvious beauties and qualities, but those more recondite, and which certainly do require some previous study), the art itself must be singularly barren of enjoyment; so much so, that it must have been prodigiously overrated. Neither is it easy to perceive how any one of common understanding can relish or feel what is, it seems, beyond his comprehension: *ergo*, such an argument on the part of professional men hardly stops short of actual *felo de se*.

IV. There are many who would make utility and convenience the test of beauty in architecture: and, most undeniably, we should always strive to reconcile beauty with them; and, again, to make them contribute to beauty of form and character, and to pleasing effect. Still, provided it should not directly militate against convenience, it is worth while to go a little out of our way in order to secure such effects; which, be it understood, are not to be confounded with mere ornament. Nay, if we take the

Greeks for our masters, we shall be warranted in occasionally sacrificing common sense to artistical effect. Of this we have an instance in the enormously high steps, or *gradini*, on which they placed their temples, by way of substructure or basement to the entire edifice. In some cases they must have been about as deep as a table is high, and, consequently, utterly impracticable for the purpose of walking up them after the usual mode. Shall we say, then, that the Greeks, whom we all extol (some of us we know not why) as the most accomplished architects in the world, were, after all, no better than blockheads? Common Sense will reply, Yes; at least, in this respect: yet, with the permission of Common Sense, I incline to say, No. Common Sense is a very respectable sort of person so long as he minds his own business, which is not art; for, as soon as he begins to interfere with that, he generally discovers himself to be only a good-meaning ninnyhammer.

V. I sincerely hope that Klenze will give the world his opinions respecting our public buildings: they would be the more valuable, because likely to be dictated by perfect impartiality as far as concerns the respective architects: and most interesting would it be to learn to what extent he was either satisfied or dissatisfied with Buckingham Palace, the National Gallery, the British Museum, &c.; also what are his ideas of our architectural taste in general. His report, I should imagine, would not be a particularly favourable one; for, judging from the taste displayed by himself in his own works, I suspect he must be of opinion that we copy Greek architecture by far more tamely and coldly than is either desirable in itself, or consistent with artist-like feeling, and ability in adaptation.

London, October, 1836.

ART. VI. *Experimental Essays on the Principles of Construction in Arches, Piers, Buttresses, &c.* By WILLIAM BLAND, Esq.
 Essay V. *Relative to the Practical Application of these Principles.*

As the principles of arches and piers, &c., given in the preceding essays, from the results of many experiments, are thus far unfolded to view, the correctness of those principles, relative to practical architecture, remains to be shown. This I shall now attempt to do, by applying them to a few of the ancient and modern structures at present existing in this country. The plan of proceeding I have decided upon is as follows:—

First. To select for examples the common barrel drain, the steening required for a well; the masonry of an oven, a few single arches, and a tunnel.

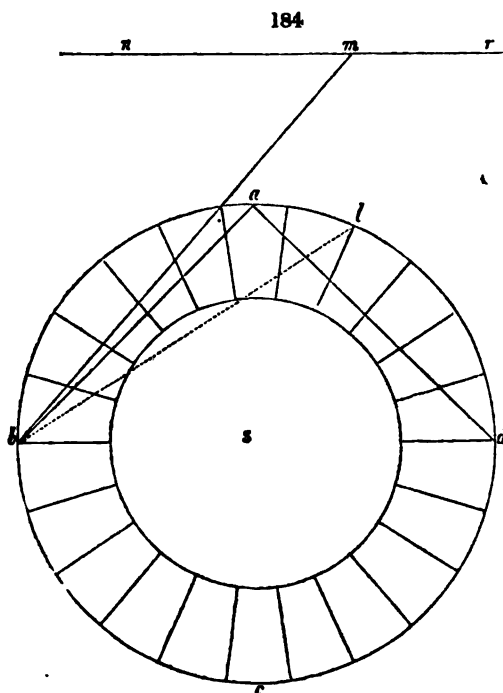
Secondly. To apply them to the architecture of small churches.

Thirdly. To bridges of more than one arch, among which are some of the noblest works of modern days.

Lastly. To examine by them one or two of the most splendid chapels and cathedrals.

When all this is accomplished, the reader, it is anticipated, will be enabled to enquire for himself, and apply the principles here laid down to other architectural fabrics which he may be desirous of examining, whether they are bridges, churches, or cathedrals; and, should any difficulties arise, a few wooden models of arches and bricks, for experiments, will quickly remove them.

The Barrel Drain.—The explanatory diagram (*fig. 184.*) is to a scale of an $\frac{1}{8}$ in. to 1 in. Let $a b c d$ be a vertical section of a barrel drain, constructed of 4 in. voussoirs in brickwork, and the opening (s) 12 in. in diameter. These structures are placed underground, and have generally a roadway over them.



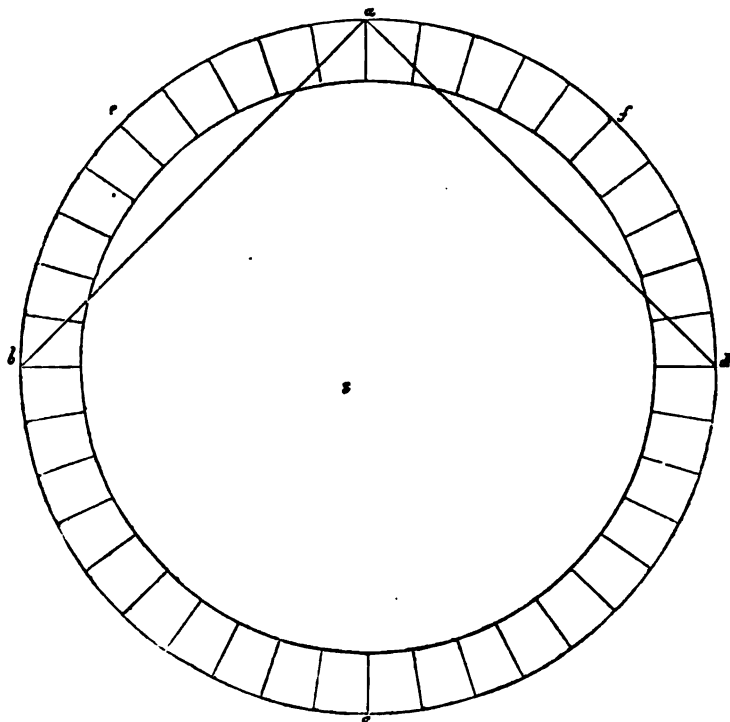
Now, the tendency of a weight passing over the crown of the drain is to compress it; first, into the form of an ellipse, and next into a straight line, after the manner of a hoop; which, while yielding under the pressure of the hand, continues extending its two sides. In consequence of the lower half of the drain ($b c d$) being based on the solid earth, it cannot in any way yield; thus leaving for consideration only the upper half ($b a d$), which forms a semicircular arch.

This arch having the solid earth for its foundation and buttresses, cannot yield outwardly. From a to b , and from a to d , draw the straight lines $a b$, and $a d$: these lines fall within the

voussoirs; therefore, the drain will carry any weight placed at a , as shown by Ex. Eleventh, Essay II., p. 117. This being a single arch, with deep voussoirs, its weakest point is at l ; for, when the straight line lb is drawn, it lies without the voussoirs; and, therefore, a great weight would cause the arch to fly up between l and b . It has been before observed, that such drains are placed underground; and, when so situated, they have a portion of soil above them, from 6 in. to 1 ft. or more; if we say 6 in., then the point l will be carried up to the line mnr , being the supposed surface of the ground. Let mb be joined, then the straight line thus formed falls within the voussoirs; consequently, the arch will support, in this case, any weight short of crushing the materials. (See Ex. Ninth, Essay II., p. 115.)

Of the Steening, or Masonry, of a Well, to prevent the Sides from falling in.—The diagram *fig. 185.* is to a scale of 1 in. to 1 ft.

185



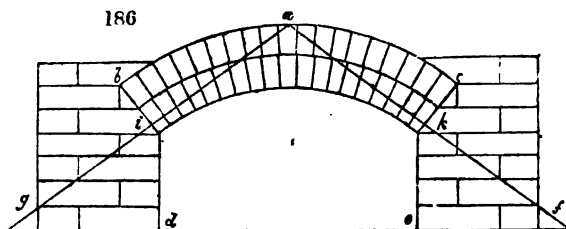
Let $abcd$ be a horizontal section of a well with its masonry; s , the shaft, 3 ft. in diameter; and $abcd$, the brickwork, 4 in. thick, as voussoirs.

Suppose a mass of earth, at the point a , were to become loose, it would fall in, but for the masonry. The tendency of the

earth against the steening at *a* is the same as the weight on the barrel drain; namely, to compress the steening in at *a*, and a tendency to cause the sides *b d* to extend outwards: but they cannot extend outwards, because of the immovable bank of earth forming the sides of the well. The steening having these immovable buttresses at *b* and *d*, the part *b a d* may be considered as a semicircular arch. Draw the straight lines *a b*, and *a d*; but, as *a b* and *a d* fall without the voussoirs, the tendency of the pressure at *a* will be to force out the arch-stones at *e* and *f*: here again, however, the effort is resisted by the immovable bank forming buttresses. This would be the case at every point of the steening; consequently, a true equilibrium is maintained throughout the steening against any outward pressure; the truth of which every old well confirms.

Of the Oven.—The scale of the diagram *fig. 186.* is half an inch to a foot. Let *a b d e c* be a vertical section of a common oven; *b a c*, the crown; and *b d* and *e c*, the sides.

This crown, *b a c*, is an arch of 6 in. rise and 3 ft. span, constructed with two courses of 4 in. brickwork, as voussoirs. The sides (*b d* and *e c*) act as piers, and are 14 in. in thickness, and 12 in. high, also of brickwork. From *a*, draw the straight lines *a i*



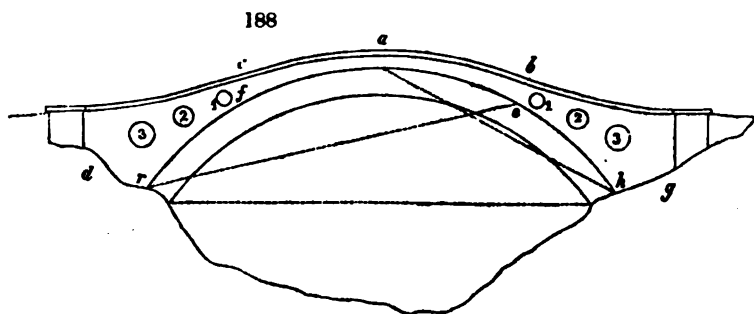
and *a k*, and extend them to the ground at *g* and *f*. Now, *a i* and *a k* lie within the voussoirs; therefore, the arch alone will carry any weight on *a*; but, since *a i* and *a k*, when continued, fall without the masonry of the piers, the latter would be overturned by a great weight on *a*. The strength of the piers then remains the object of enquiry.

The arch *fig. 146.* (Essay IV. p. 408.) corresponds in dimensions with the crown of the oven. This arch balances on piers 7 in. high and 4 in. in base, or nearly double in height the thickness of the base, which is nearly $\frac{1}{4}$ of the span. Now, the sides of the oven, acting as piers, are rather less in height than their thickness of base, which, in this instance, almost equals $\frac{2}{3}$ of the span; consequently, they will support the crown of this oven very firmly, having no great extra weight placed at *a*. The thickness of the masonry of the crown and sides is quite necessary in another point of view; namely, to hold and economise the heat of baking.

under 6 tons. Let it be possible for a load to go over the bridge equalling 12 tons; this load would take up one third of the width of the roadway. Now, it has been shown that one third of the bridge will carry 360 tons, or 30 times 12 tons.

With the view of ascertaining what weight the bridge would carry without opening the joint at the keystone, a vessel of paper was suspended in the angle of the joint, being inserted $\frac{1}{4}$ in. up the joint on the outside, and 1 in. along the joint underneath. The arch carried 6 lb. on the crown; but a greater weight caused the paper to fall down by the opening of the joint underneath. Now, 6 lb., multiplied by 20 (the number of tons which 1 lb. in the model represents), gives 120 tons; therefore proving most satisfactorily that the strength of this bridge is many times greater than the weight of any load which can possibly be drawn over it; and this, too, independently of the two banks, which act as buttresses.

Ponty Prydd Bridge.—This bridge, in Glamorganshire, represented by *fig. 188.*, which was designed and constructed by an uneducated architect (William Edwards), is of one arch, ex-



tending 140 ft. in span; the rise, or altitude, being 35 ft. The arch forms the segment of a circle, the diameter of which is 170 ft. It was completed in the year 1755. (See Malkin's *South Wales*.)

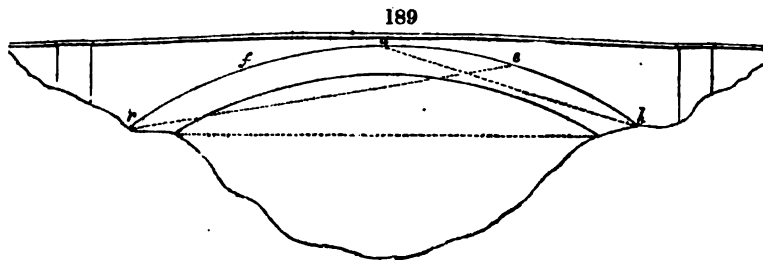
The engraving is correct in the proportions of span and rise of this famous arch, having *d* and *g*, the buttresses, of living rock, and therefore immovable. The depth of the voussoirs, or the thickness of the masonry of the bridge at the crown (*a*), is not given by Mr. Malkin. This arch was put to the test of experiment by a model made of wooden voussoirs. The scale being of a quarter of an inch to a foot, allowed 10 ft. for the depth of the voussoirs, which dimension is adopted in the elevation (*fig. 188.*). Now, the arch, so constructed, carried 8 lb. placed on the voussoirs at *e*: more than this weight caused the opposite part of the arch to fly up at *f*. According to the scale of the model, 8 lb. equals 540 tons.

It appears from Mr. Malkin's account, that Mr. Edwards's first bridge of one arch fell down; which was caused, as the architect supposed, by there being too great a weight on the haunches at and between $b g$ and $c d$, that forced the crown up. In consequence of this, Mr. Edwards, on the reconstruction, caused holes to be left at 1, 2, 3, to lessen the weight at those parts; and the bridge now stands very well. Whether the depth of the voussoirs, or the thickness of masonry at the crown, was increased or not, there is no mention made. The width of the roadway is also omitted; but the wooden voussoirs in the model, being 4 in., will afford a scale to ascertain the proportionate width of the bridge, which is 16 ft.; and the span of the arch in the model is 36 in., which equals 144 ft. in the bridge, which is nearly right.

It will be seen, by looking back to *figs. 24. and 25., Essay II., p. 115.*, which are similar segments to the bridge under consideration, that the haunches, or the additional weight contained in $c k b$, strengthened rather than weakened the arch, particularly when added to both sides, as in the latter figure of the two above referred to. But it must be observed, that the depth of the voussoirs at the crown in those figures is great, which, it may be presumed, was not the case in the bridge of Mr. Edwards's construction; consequently, this deficiency was the cause of the downfall of the first bridge, as exemplified in *Ex. 12, 13, and 14. (p. 118. and 119.)*

In following up the experiments with the model, the haunch at e (*fig. 188.*) was built up to nearly a level with the crown; when at the height of b , over e , the arch carried 12 lb. Upon placing similar masonry on the opposite side, the arch, at the point b , carried more than 24 lb.; thus proving again, as was the case in the experiments above alluded to, that masonry at the haunches, when the crown is of sufficient thickness, adds strength to the structure.

Again, an arch (*fig. 189.*) was made of the segment of a circle, the radius of which equalled its span, or 140 ft.; having the vous-

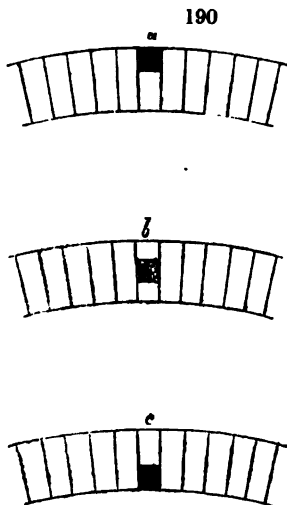


soirs 10 ft. deep as before, in *fig. 188.* This arch carried, at e , 16 lb. well. Now, on inspecting these two elevations, the dotted

line $a h$, *fig.* 189., will be found to be quite within the voussoir; but this is not the case with the line $a h$, *fig.* 188.; also, the dotted line $e r$ in *fig.* 189. is considerably nearer the intrados than $e r$ in *fig.* 188.; therefore proportionally the stronger: or *fig.* 189. would have required less depth of voussoirs or masonry at the crown; therefore, that it has two advantages, namely; greater strength, and an easy ascent for carriages, which Mr. Edwards found out afterwards.

Since much has been said respecting the depth of voussoirs, a trial was made to ascertain what would be the result on substituting a voussoir of 4 ft. in depth in the room of one of 10 ft. This was carried into effect in the model by exchanging the key or crown voussoir for one of only 1 in. in depth, which is equivalent to 4 ft. The diagram *fig.* 190. represents crown portions of the arch, having the dark voussoir to represent the small one, which was first placed at a ; then in the middle, as in b ; and, lastly, at the bottom, as in c .

On putting the weights at e , on the arch *fig.* 188., the results were as follows:—With the small voussoir in the position shown at a , *fig.* 190., the arch carried 2 lb.; when the same voussoir was placed as shown at b , the arch carried 4 lb.; and when in the position shown at c , 8 lb. was the weight the arch sustained.



When the weights were placed at e , *fig.* 189.; the results were thus:—The small voussoir being at a , the arch carried 3 lb.; when at b , 6 lb.; and in the position shown at c , 12 lb.

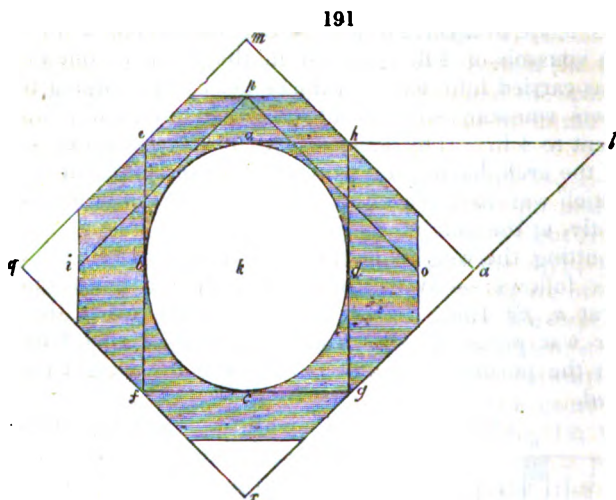
Now, on removing the weights to the crown over a , the results of both arches (*figs.* 188. and 189.) were inversely of those given when the weights were at e , by the arch carrying the most when the small voussoir was in the position shown at a ; and the least when the same voussoir was placed as shown at c .

We have here a strong proof of the propriety of the keystone of arches fitting closely at all parts of the adjoining voussoirs.

Of the Tunnel.—The objects for which tunnels are constructed are usually for the purpose of thoroughfares underground, as through hills, &c.; for man alone, for carriages and horses, for canals, and for railroads.

The figure of a man, and his loads, at once determine the requisite form; namely, the oval or elliptic. It is well known

that an egg will sustain, without breaking, very great force of pressure when placed endways between the hands: yet the shell is particularly thin. From this fact it appears, that nature's form of the egg is the form best adapted to a tunnel. The dimensions of an egg are $2\frac{1}{2}$ in. for the greater axis, and $1\frac{1}{2}$ in. for the smaller axis; or, the axis major is to the axis minor as 17 is to 13. The diagram *fig. 191.* is described after these proportions.



Having laid down the axis major (ac) at $2\frac{1}{2}$ in., and the axis minor (bd) at $1\frac{1}{2}$, the ellipse ($abcd$) was described by taking $\frac{2}{3}$ of the axis major for the radius of the sides, and the remaining $\frac{1}{3}$ for the radius of the ends. These two segments of circles coincided exactly, which was not the case with segments of dissimilar radii.

Let $abcd$ be the ellipse described from the centres of two circles, instead of two foci, making the dimensions proportionate to the natural size of the egg selected; then ac is the axis major, and bd , bisecting ac at right angles at k , is the axis minor. At the points b and d , draw the straight lines ef and hg parallel to ac ; and at the points a and c , draw the straight lines eh and fg parallel to bd . Produce ac indefinitely both ways, and let am equal ae or ah ; and cr equal cf or cg . Join em , mr , fr , and rg . Produce, likewise, bd indefinitely both ways, and let dn equal dh or dg ; and bq equal bf or be ; join hn , ng , fq , and qe . Now, in the triangle aem , the angle aem equals the angle ame : and the angle eam is a right angle; therefore, the angle aem equals 45° . In like manner, it may be shown that the several angles ahm , dhn ,

and $d g n$ equal 45° : also, the same may be shown in the triangles $g r f$ and $f q e$.

In Experiment Tenth (p. 116.) it is proved that masonry forms a natural arch at the angle of 45° , and will carry a heavy weight on m , *fig.* 27. (p. 116.), because of the straight line $m a$.

If this be the case with masonry, the law with regard to the pressure of solid earth must be similar; and the weight to be borne on the arch at a , *fig.* 191., equals the triangle $e m h$ in perpendicular pressure. As respects lateral pressure, it is known that a bank of earth will just support itself when inclined at an angle of 45° . Produce $e h$ and $g n$ until they meet $a b$. Let $g n l$ be a plane inclined 45° ; and let $g h l$ be a mass of earth resting upon this inclined plane, and, consequently, pressing against $h g$. If the straight line $l g$ represent the force of this body of earth, it may be resolved into the two straight lines $l h$ and $h g$ (See Wood's *Mechanics*, Prop. II.): but $h g$ is parallel to the side; therefore, $l h$ is the force which alone acts against the side. In the two triangles $h g n$ and $h l n$, it may be easily proved that $l h$ equals $h g$; and the triangle $h g n$ equals the triangle $h n l$; therefore, we have the triangle $h n g$ representing the proportion of earth out of the whole body contained in the triangle $h l g$, which alone presses against the side $h g$.

Now, $a m$ equals $a e$, or equals the half of $b d$, the axis minor; and $d n$ equals $d h$, or equals the half of $a c$, the axis major; therefore, the triangles $e m h$ and $h n g$ are to each other in the same ratio; that is, the pressure of earth at a is to the pressure of earth at d as the axis minor is to the axis major. The same may be shown of the pressure at b and c .

Just without the ellipse, draw the straight line $p o$ parallel to $m n$, and, consequently, cutting $a m$ and $d n$ proportionally in the points p and o : that is, $a p$ is to $d o$ as the axis minor is to the axis major, or as the weight of the earth in the triangle $e m h$ is to the weight of the earth in the triangle $h n g$. Let $a p$ be the thickness of the masonry at a ; and $d o$, the thickness of the masonry at d : we have then the straight line $p o$ lying within the masonry.

Since the masonry surrounding $d c b$, which is represented in the diagram by the shaded part, rests on the solid earth as the foundation, the remaining part, or the arch $b p d$, need only be considered. With regard then to this part of the arch, we have at i and o two immovable buttresses in the side earth, with the straight lines $p i$ and $p o$ lying within the masonry; therefore, the tunnel will bear any weight on p .

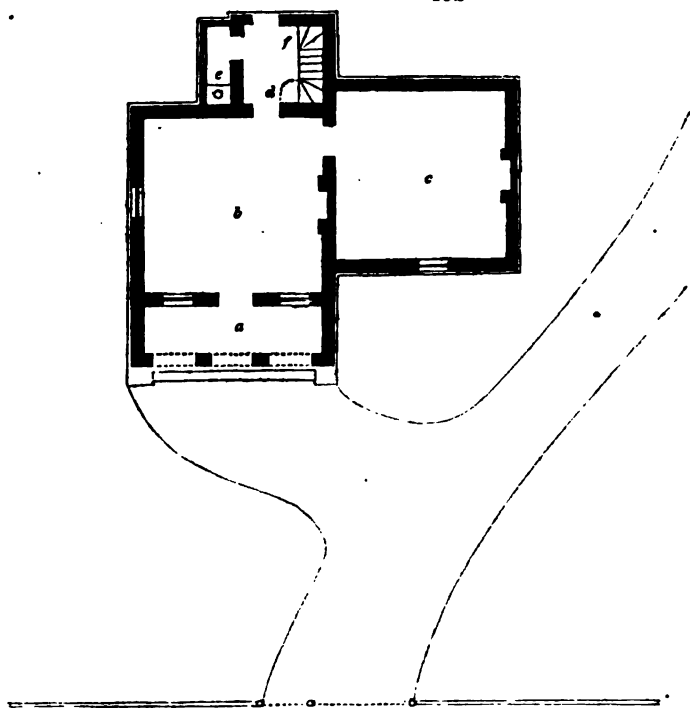
Again, the masonry at p is immovable upwards, from the resistance of the solid earth above; therefore, the arch, at o , is capable of supporting any pressure of the side earth, should it

be disposed to slip in. The same may be shown of the points *e f* and *g h*, in consequence of the straight lines *e h*, *h g*, *g f*, and *f e* being within the masonry. A tunnel, therefore, constructed of this form and masonry, will support itself against any pressure.

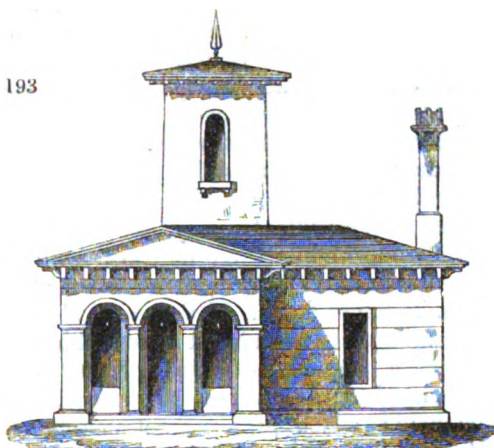
ART. VII. *Design for a Lodge in the Italian Style.* By EDWARD BRIGDEN, Esq., Architect, Bristol.

THE lodge, of which *fig. 193.* is the elevation, is designed in the Italian style, as an appropriate appendage to a villa in the same style: for I think there should always be a correspondence between the entrances and the house itself.

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The present design may be executed in brick, and stuccoed on the outside; or, if Bath stone could be obtained at a reasonable rate, it should be preferred. The roof should be slated, and the floor boarded; for boarded floors, in most situations, last longer than stone, to say nothing of the additional comfort produced by boards, which in buildings of this nature should



never be lost sight of. The sashes may be in metal frames, for the sake of lightness. The plan is very simple, and will easily be seen by reference to *fig. 192.*; in which *a* is the porch; *b*, the living-room; *c*, the bed-room; *d*, the washing-place; *e*, the water-closet; and *f*, the staircase, which leads to a room in the tower, or belvedere, which may be used as a store or bed-room.

REVIEWS.

ART I. *The History and Antiquities of the Vicar's Close, Wells.* Forming Part I. of Pugin's *Examples of Gothic Architecture*. Third Series. By T. L. Walker, Architect, Honorary Treasurer of the Architectural Society, London. With 26 plates. London, 1836.

"A LASTING debt of gratitude," says Mr. Noble, in his recently published work on *The Professional Practice of an Architect*, &c., "is due to Messrs. Pugin for their laborious measurements and details of various examples in their useful works upon ecclesiastical, collegiate, and domestic Gothic." Most fully assenting to the above opinion (which, we presume, must be that of every one capable of appreciating the tasteful execution and fidelity of the numerous studies of Gothic architecture delineated by the late Mr. Pugin), it has given us unfeigned satisfaction to perceive that the latest and most valuable of his labours has found able continuators of it in his son, and Mr. T. L. Walker, his pupil. In the portions published since his decease, there has been no falling off from the spirit of the preceding ones in any respect; certainly not as regards the interest of the subjects; for, although some of them are not so generally applicable as were those exhibiting the more familiar and well-known features and

peculiarities of the Gothic (consequently, those more in request with the mere copyist), they recommend themselves still more strongly as specimens, no less remarkable for the quality and taste they exhibit, than for their rarity. Neither shall we consider them the less welcome, when we know that some of the choicest of them were, even at the time the drawings and measurements were made, so greatly injured by neglect and decay, or by mutilation and alterations of the most barbarous kind, that it would have been impossible for any one less intimately acquainted with Gothic architecture, and also with construction and execution, to trace, not the general forms alone, but the most complex minutiae of detail. If, therefore, almost the rudest and most misshapen sketch be almost inestimable in the eyes of the antiquary, as a memento of some "fayre building," now destroyed, how incalculably precious ought such works as the present to be held! which preserve not merely the outward lineaments of the buildings in all their perfection, but also completely reveal the most intricate forms; thus making us acquainted with the means by which all the peculiarities of character were produced, and showing how the architects of those days conceived and wrought their works.

To form a worthy idea of old St. Paul's, and other ancient structures, from the prints of Hollar, requires a strong effort of the imagination; for, unfortunately, those who lived nearest to the times when they were erected seem to have been greatly deficient in the qualifications necessary for an architectural draughtsman. Even when their representations may be tolerably correct, they never appear so, owing to the tastelessness, as well as coarseness, which they exhibit. Were they, however, irreproachable in themselves, the architect would require much fuller information than we pretend to give, before he could clearly understand what is so shown; and this is, almost without exception, the case with every thing relative to Gothic architecture, before Mr. Pugin began to do for that style of the art what Stuart and others had done for the Grecian. Particular features were occasionally shown at large, but hardly any single one was made out completely; so that, although they might serve well enough to make us acquainted with general forms, they were very inadequate for further purposes of study, as any one would be convinced, were he required to make out from such drawings, of a door or window, for instance, all that is not represented in the elevation, and a few partial details of ornament. Well, therefore, may we credit the anecdote related of a late eminent architect (by Mr. Wilson, in a note at page xxi. of Pugin's *Gothic Specimens*), who once exclaimed, "I hate the Gothic style: one window costs more trouble in designing it than two houses ought to do:" certainly more than half a dozen modern Greek por-

ticoes do ; notwithstanding that Mr. Hamilton asserts a Gothic window to be only a triangular hole in a wall.

Superior as it is to any thing which had preceded it, even that work of Mr. Pugin's just mentioned suffers by comparison, for exactness and fulness of representation, with his latest one, the value and interest of which is not a little enhanced by its consisting of buildings hardly ever before delineated architecturally, and those, too, of a class for which authentic documents were much wanted. Models of the ecclesiastical style may be met with in every part of the kingdom : with good specimens of domestic buildings the case is widely different ; neither are they so accessible, nor so entire, that the architect, supposing he knows where they are, can examine them with much benefit.

Of this we have but too much proof in those of the Vicar's Close at Wells, which are now so miserably dilapidated and injured, that it is most probable in a few years the present work will be a record of what will utterly have perished : indeed, it may be said to have nearly vanished already.

"It would naturally enough be supposed," observes Mr. Walker, in the historical chapter to his volume, "after so munificent a gift by the founder, and so many valuable additions to the temporalities and comforts of the inhabitants by subsequent benefactors, that a true spirit of gratitude would have been manifested among the successors of those immediately receiving so sumptuous an asylum, with many other benefits ; and that their first care would have been to retain, as much as possible, the pristine beauty of the several buildings composing their college ; and delineated in the following plates. But, alas ! how lamentably the reverse of this has been the case ! for no one who was not intimately acquainted with the peculiarities of the various styles of Gothic architecture, and able to discover, from the present ruinous condition of the exquisitely carved work, what it originally had been, would persuade himself that these were faithful representations of the Vicar's Close. The chapel he would find in disuse, and filled with lumber ; the ceiling of the hall hanging down in large patches ; the rooms under it converted into a malting-house ; the houses modernised with common sash windows, bastard Italian doors, and plain parapets ; and a common shop front, within a few short weeks, inserted under the beautiful little oriel window, shown in Plates V. and VI., at the very entrance to the Close from the street ; and this by one of their own body, as if in positive defiance of the advocates of good taste and a proper feeling of reverence. The elegant pinnacles and paneled parapet of the gallery over the Chain Gate are so completely decayed and ruinous, that the loose stones threaten danger to the passers-by ; and the profiles of the mouldings are hardly discernible."

This is a pitiable picture enough ; and the recent act of wanton defacement, by putting in a shop window beneath the oriel, shows that there exists more of inclination to destroy, than to restore, or preserve from further decay ; and that, too, at a time when so very different a spirit has been manifested elsewhere by the restoration of the "Ladye Chapel," Southwark, and Crosby Hall. We think that on every interpolation, the names of spoliators and defacers should be publicly recorded *in terrorem* to others ; for, although persons cannot be restrained from exercising a legal

right, even when their sordidness or their caprice induces them to destroy objects of public interest, they ought to be made to know that, by so doing, they incur the danger of a most unenviable celebrity. Thanks, however, to the active zeal and skill of Messrs. Pugin and their *collaborateur*, Mr. Walker, this truly interesting series of buildings is not only rescued from perdition, but restored in all their original beauty and integrity. Nor would it be easy to point out one which supplies so many features and bits of composition well suited for adaptation to domestic buildings, of a public as well as a private character; such as almshouses, hospitals, schools, &c., for which class of structures the Gothic of the latter half of the fifteenth century peculiarly recommends itself.

The Close Hall, or Chain Gate, as it is called, erected by Bishop Beckington, who held the see from 1443 to 1664, is, with the gallery over it, leading from the Common Hall to the staircase of the Chapter House, a remarkably elegant specimen; and there is something very unusual in the windows immediately over the gate; for, while each forms internally two distinct apertures, externally it presents the appearance of a single window, divided by mullions into three compartments; the centre one being occupied by a canopied niche containing a statue. The chapel, which, with the library over it, occupies the farther or northern end of the close, exhibits many interesting studies of detail, particularly the door and doorway, which, although not floridly decorated, are of rich design. This chapel, being only a moderate-sized, and by no means lofty, room, a mere parallelogram in its plan, seems to offer a good model for Protestant places of worship, and shows how much more character and propriety may be obtained by a few well-selected and carefully finished parts, than by ambitiously aiming at what belongs to large and complex buildings, and which, when transferred to modern churches, is generally so ill-managed, that the whole has a stinted and impoverished look. The Vicar's houses cannot be recommended for their convenience as dwellings, nor for any contrivance they exhibit internally; but in their elevations, and all that appertains to style, there is much to admire, and much which the skilful architect may turn to account, not as a mere plagiarist, but by intelligently availing himself of the ideas and hints thus supplied.

This first portion of the third series of the "Gothic Examples" forms a separate work; and, if not so miscellaneous as any of the preceding ones, we do not esteem it the less on that account, inasmuch as it affords complete elucidation of the buildings, both internally and externally. The execution of the plates is highly creditable to Mr. T. Bury, who, if now at little more than the beginning of his career as an architectural engraver, promises to

become one of the very best in that peculiar department, having been long a proficient in architectural drawing. In fact, the publication is every way worthy of the series which have preceded it: and higher praise than this will not be required from those who are acquainted with them. The only thing which we object to is, Mr. Walker's intention to terminate it in two other parts: yet even this objection will vanish, should he afterwards prosecute an undertaking, to which he shows himself so adequate, under any other title or form.

ART. II. *A Collection of the most approved Examples of Doorways, from Modern Buildings in Italy and Sicily, &c.* By T. L. Donaldson, Esq., Architect; Honorary Secretary to the Institute of British Architects, &c. 4to, 22 pages of letterpress, and 30 plates. London, 1836.

(Continued from p. 324.)

IN our notice of the first volume of Mr. Donaldson's valuable work on doorways (p. 319.) we gave a general opinion of the merits of the second volume; and we shall now enter more at length into its details. The volume now before us is dedicated to the president and members of the Institute of France, by their colleague, the author; and the first chapter contains a sketch of the history of Italian architecture, from its revival to the time of Palladio. During the Roman republic, brick was the principal material used in buildings, with few exceptions; such as the Cloaca Maxima, and some of the temples and fora (market-places), at Rome. From the time of Augustus to that of Trajan, architecture flourished: afterwards it declined, till, at the time of the irruptions of the Goths, it had fallen from its ancient majestic simplicity, only to be degraded still farther under the Lombards; when, as Mr. Donaldson observes, "want of proportion, irregularity of design, and caprice in decoration, prove to us that good taste was entirely lost.

"During the darker ages, men of science in the art were unknown: the mechanic, by his practice, acquired a few principles, which were now and then acted upon with additional success by some of superior mind; and, as those were times of war and tumult, the military art occupied the principal attention of even that small portion of science which then guided the operations of builders. Then were the sister arts devoid of their natural charms. In the paintings of those days, the figures were without proportion, without drawing, without colour, without shadow, without attitude, without invention or composition; surrounded by a dark outline, with large and fearful eyes, long tapering fingers, feet closed, and altogether repulsive by their flinty hardness: thus, also, was it with architecture. The edifices were overpowering masses of solid materials, with mean openings, heavy dressings, devoid of proportion, beauty, and comeliness; irregular in plan, and dark, gloomy, monkish, and terrible as the untameable republicans that dwelt therein." (p. 2.)

Giovanni da Pisa, in the fourteenth century, made a great advance in architectural taste; but to Filippo Brunelleschi, who died in 1444, was reserved the honour of reviving in Europe that taste for the classic productions of this art, which for ages had lain dormant. This architect was the designer of the principal of those remarkable places in Florence, which no one can forget who has ever visited that city. They exhibit immense elevations, characterised by small openings, strongly marked rustic divisions, diminutive ornamental details, and the whole crowned by immense far-projecting cornices. The house of every man of rank in Florence was, at that time, his castle; and the exterior presented, accordingly, a strong, a sombre, and a gloomy aspect.

"The simple lines of the portal of the palace Strozzi, for example, with its uninterrupted dressings, circular head, and rustic border, oppose a noble character and firm resistance to the assailant; nor do the small openings, which afford a spare light to these chambers, diminish the strength of this floor. The piano nobile admits more lightness of appearance in the windows, which are of the Venetian school: but still the ample rustics preserve, though in a less decided manner, the robust character of the basement. Here the angles are not suggested to be weak by a useless projection, but the uninterrupted lines of the dressings and of the string course carry on the eye, with calm continuance, to the end. [This is just and valuable criticism, well deserving the attention of the young architect.] The upper floor is a repetition, in point of division, of the piano nobile; the rustics, however, do not project so much, but bear the same gradational proportion of character as those on the piano nobile do to those of the basement. Nothing less than an imposing mass of cornice should crown so noble a building. Here a certain richness of effect enlivens the simplicity of the other parts of the elevation, though the bold projections and grand divisions of the mouldings and plain faces keep up the dignity of the place. The eye thus ends its survey with satisfaction; undisturbed by gaudy detail, unembarrassed by useless matter; and the progressive increase of unmixed feeling affords pleasure and interest, tending even to ennoble the sentiments of the beholder." (p. 3.)

Leon Battista Alberti, a Florentine architect, was the designer of the Palazzo Rucellaj, which Mr. Donaldson signalises as "a specimen of the style of architecture very generally adopted by the Cinquecentisti, by which term are distinguished the architects of this age, an epoch very important in the art.

"The façade, still incomplete, was intended to be composed of seven inter-pilustrations. The basement is raised upon a podium, which, on the outside, serves as a seat for the retainers of the prince and the weary passenger. This lower floor is decorated with a complete Doric order; having square windows, with appropriate dressings between the pilasters; and the face of the wall throughout the front is intersected with sunk chasings. The piano nobile displays a Corinthian, the pilasters of which are adorned with a capriciously elegant cap, and the base standing immediately upon the cornice beneath, without any intermediate podium, or plinth. The windows are circular-headed, and divided into two compartments by a small column. The upper story has also pilasters, with their own proper caps, surmounted by an entablature, which in dimensions is a mean between that appropriated to the pilasters it crowns, and one which would be required to accord with the whole height of the edifice. The windows of the third floor are precise copies of

those in the second. The great art in the palace has been to give little relief to the projections of the pilasters, entablatures and dressings to the windows; so that even the subdivision of the building into such small compartments should not destroy the breadth of light upon the mass of the building; or, that the apparent effect of the building should correspond with the real mass, and not be destroyed by its subdivision into such small parts. In this production there is a calmness, modesty, elegance, and deliberate caution, which, if they do not quite compensate for the absence of higher effects, never grossly offend, nor can ever be regarded without pleasurable emotions. His church at Mantua, which is more striking in its effect, possesses great originality of invention, is imposing in its elevation, grand and well proportioned in the interior." (p. 4.)

The Cinquecentisti, in their painting, sculpture, and architecture, no less than in their literature, are distinguished by what is technically called dryness of style, of which term this may be considered as Mr. Donaldson's explanation: —

"With singular felicity, they seem to have seized upon the purer elegances of the antique models, and to have devoted most of their attention to the study of the most minute parts. But this servile attention to minutiae appears to have cramped their creative powers, and the productions of the Cinquecentisti are to be admired rather as pure applications of what has preceded them, than as vigorous emanations of original genius. The predominating principles of Bramante's idea of architecture is breadth. He therefore lays down in his composition a great mass. To diversify this, he introduces slightly projecting orders, which, in their whole, as well as their parts, he preserves also small, to serve as contrast. These orders are elegantly profiled; though it is to be remarked that they are too much portraits of each other. His openings are also very small, in order not to destroy the effect of his mass. These details produce an incongruous medley of nobility and meanness: dry in effect, hard in detail. All the elevations of his palaces appear like neat architectural drawings, unshadowed, with the under lines of the cornices and one side of the perpendicular projections marked with a thicker line. His courts, however, are very elegant and effective. There is this great defect in Bramante's buildings, that not one of them is soundly built. All his constructions are falling in some part or other, and only kept together by iron ties, put in since his time. The noblest of Bramante's works is the court of the Belvedere at the Vatican, where he has displayed much ancient magnificence, by means of grand flights of steps, uninterrupted lines of statues, pedestals, and fountains." (p. 5.)

"Verona has produced an architect, whose productions, little known in England, are the chief embellishments of this antique city. Michele Sanmichele, after studying the first principles of the art under his father and uncle, went, at sixteen years of age, to perfect himself by the study of the antique edifices of Rome; and not only excelled in civil architecture, but in the tactics of the military architecture of his time. To Sanmichele are the moderns indebted for the invention of military architecture and fortification as now followed. Before his time, the bulwarks were round and square. He it was who changed this system, and invented the triangular, or, rather, pentangular, bastion, with rectilinear faces and flanks; which double the defence, and not only flank the curtain, but all the face of the next bastion, and clear the ditch and covered way. The secret of this art consisted in defending every point from the flank. Many of the Greek islands, some cities in the Greek Peloponnesus, and numerous cities of Italy, were fortified by him." (p. 6.)

"That colossus of painting and sculpture, Michael Angelo Buonarroti, because he excelled in these arts, has been considered, also, as equally eminent in architecture: this name is continually cited, as that of one of the

restorers of architecture. The mind of Buonarroti was capable of magnificence and overpowering sublimity as a painter and sculptor; but, as an architect, he was ignorant and capricious, of bad taste, tending by his example to retrograde, instead of advancing, the art. We have, unfortunately, too many examples of his vicious style. The chapel in San Lorenzo, and the Medicean Library in Florence, evince how far Michael Angelo was deficient in the very grammar of the art. Who, that examines this latter production, can call, with any degree of reason, Buonarroti a good architect? In the vestibule, we see columns, instead of forming the principal features of the composition, used as mere ornaments sunk in niches; and, to prove the greater absurdity of their decoration, supported upon consols. The door is devoid of grace, breadth, and grandeur; the windows distorted by terminal pilasters, and other heavy incongruous dressings." (p. 7.)

We pass over several pages of highly interesting matter, correctly and elegantly expressed, to give the author's conclusion; which, from the descriptions and criticisms it contains, we think, may be termed the most instructive history of Italian architecture that has yet been published. Mr. Hope and other writers have gone much more into detail; but Mr. Donaldson, by giving a condensed view of the subject, by passing over many historical particulars of little interest out of Italy, and, above all, by his investigation of the causes by which bad or good effects have been produced, has made his work one which may be read with profit by every architect of reasoning taste.

"In considering the preceding summary of the state of architecture during the period of about two centuries and a half immediately previous to the time of Palladio, we perceive, in the middle of the thirteenth century, a glimmering of light, which first began to dispel the obscurity that had clouded the productions of these dark ages, and which was completely dispersed by the powerful genius of Brunelleschi. The efforts of this great man were seconded by the example of Alberti, who founded his elements upon the contemplation of the antique, and the study of Vitruvius, the valuable writings of whom were then for the first time restored to the world. The Roman author was, in fact, of great service; for the authority of a classic, at the time when literature began to influence so materially the pursuits of man, was undeniable. We are not to consider, however, that the architects of the fifteenth century were indebted to Vitruvius alone, but also to a profound research among the valuable ruins of ancient magnificence. Vitruvius himself was not a good architect; and his books can only merit attention when, by a judicious selection from the ancient authors, he is entitled to our confidence. In those parts where he has introduced systems of his own, and descriptions of his own compositions, we recognise a want of correct taste. Let not our praise, however, be withheld from him, as a man of integrity, and as asserting the honour and respectability of the art. An admirable strain of moral feeling reigns throughout his poems in particular: to them we may safely attribute that frankness, independence, liberality, and disinterestedness, which generally distinguishes the character of the professors of those times, as recorded by Vasari, Temanza, Milizia, and other historiographers of architecture. To Alberti succeeded Bramante, who was seldom, if ever, guilty of any glaring inconsistency, yet, from excess of modesty, never was free from dryness, nor ever attained any sublimity of effect, except in the Vatican. Peruzzi had more feeling for form, yet was deficient in the composition of his general masses; but the Sangalli first boldly dared to try the effect of marked projections, and, in conjunction with Sanmichele, released the minds of the architects from the trammels of that dry pedantic style, whose only merit was

in being scholastically pure, not decidedly incorrect, yet had not the virtue of employing the bolder contrasts of deeper chiaroscuro to dignify its productions. At this time, we recognise that the following improvements had taken place:—The orders were well understood in their proportions and divisions, as also the beauty of isolated columns (arches over columns were exploded); a variety of forms was introduced in the churches and palaces, and the distribution of edifices in general was more dignified. (*Milizia Roma delle Belle Arti*, p. 178.) Architecture was next in danger of being quite perverted by the bold attacks made by Michael Angelo, Giulio Romano, and the other painter architects of that day, upon those first principles on which are founded all the reasonings of pure design. But the good taste of Sansovino, the writings of Serlio, but, more than all, the irresistible genius of Vignola, again restored the studies of the architects to those models, a departure from which ever produces the debility, corruption, and annihilation of Italian art. In quoting the names of Vignola, Serlio, and Ligorio, who flourished many years at the same time with Palladio, I consider myself authorised to suppose their works, which Palladio must have studied, as contributing to influence his taste. The interval of ten or twenty years, though inconsiderable in the annals of a nation, produces a material difference in the memory and progress of individuals. It was under such favourable circumstances, and with a happy predisposition for the pursuit, that Andrea Palladio entered upon the study of architecture. It is to be regretted that we have no certain information with respect to his youthful studies, other than those few scattered allusions in his own writings, but which refer so little to former occurrences, as to leave us almost entirely ignorant of this most interesting period of the life of any man who has risen to eminence. Vitruvius and Alberti seem to have been the leading masters for whose works Andrea entertained the greatest respect, and to whom he acknowledges himself indebted. But, for the more practical illustration of the theories of these writers, Palladio devoted his attention to the indefatigable and most profound study of those Roman antiquities, which flourish ever in their old age, and to which the accumulation of centuries seems to add fresh charms. The genius of Palladio does not appear to have been calculated for domestic architecture. He has rarely seemed to feel the difference which exists between private edifices and public buildings. In the elevations of his houses, the large gigantic orders create unpleasant effects; sometimes extending up the whole façade in colossal proportions; at others, standing on a lofty basement; and not unfrequently raised on projecting unconnected pedestals, as though hoisted on stilts. On the other hand, the public edifices of Palladio, when unrestrained by the caprice of his employers, or the habits of his contemporaries, take the first rank among modern productions. The Redentore and the Convento della Carità at Venice, and the Olympic theatre and Basilica at Vicenza, announce a man of enlarged ideas, master of ancient usages, capable of appreciating and producing the sublime, and alive to the effect of every minute detail. By his writings, as well as by his buildings, Andrea has influenced more than any other master the style of architecture since his period; and, as a style, the productions of the Palladian school can be considered as inferior only to the magical works of the ancients." (p. 14.)

Chap. II. is a description of the plates, which are, as follows:—

Plates I. and II. Doorways of the Riccardi and Strozzi Palaces, Florence. III. Doorway in the Piazza San Firenze, Florence. IV. Doorway in Farnese Palace, Rome. V. Doorway from the Piazza della Madonna Loreto. VI. Doorway from the church of the Madonna delle Carceri, Prato. VII. and VIII. Doorway of San Giovanna Laterano at Rome, and the details of the preceding plates. IX. Doorway from the palace Massimi at Rome. X. and XI. Doorway from the cathedral at Vicenza, and details of the two pre-

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ceding doorways. XII. Doorway from the Capitol, Rome. XIII. and XIV. Doorway of the Stefaneli Palace, Rome, and details of the two preceding examples. XV. and XVI. Doorway from the Oratorio of San Marcello, Rome, and details. XVII. and XVIII. Door in the Farnese Palace, Rome, and details. XIX. and XX. Doorway forming the principal entrance to the Palace Massimo, Rome, and details. XXI. XXII. and XXIII. Doorway to the Chiesa San Michelo in Bosco at Bologna, and details. XXIV. and XXV. Doorway from the church of Santo Spirito at Florence, and details. XXVI. Doorways from Palermo and Messina, Sicily. XXVII. and XXVIII. Gateway of the Farnese Gardens in the Campo Vaccino, Rome, and details." (p. 22.)

La Société libre des Beaux Arts de Paris, of which Mr. Donaldson is a corresponding member, after submitting the first volume of this work to the examination of M. Biet, Architect, awarded him a medal in 1835. (See *Recueil Indust.*, 2d ser. tom. ii, p. 28.)

ART. III. *Plans, Elevations, Sections, Details, and Views of the Cathedral of Glasgow.* By J. Collie, Architect. Folio. London, 1835.

WE noticed the first part of this work in p. 88., and have now to announce its completion, in one imperial folio volume, consisting of seven pages of letterpress and thirty-four plates. The drawings on the plates are on so large a scale, that they cannot fail to be of much use to practical men. That the church contains many original features, and well deserves the study of the architect, may be affirmed on the authority of the following passage, quoted by Mr. Collie from Mr. Rickman:—

"Glasgow Cathedral," he says, "is a large and fine cross church, with remarkably short transepts. It has a towering spire at the intersection, and another tower at the west end of the north aisle. The nave and aisles form one church; the choir and aisles, another: the transepts and a part of the nave are open as a vestibule for access to each church. The general character of the church is early English, very excellently designed and executed; and, although some part of the work is of later execution, the same style is well kept up. At the end of each transept are additions, now in ruins. On the north side of the east end of the choir is the chapter-house; and beneath it and the choir, the crypt. The composition of the nave and choir is different, but each very good. In the choir, the capitals of the piers are flowered; in the nave, plain. Those in the choir very much resemble some capitals in the transepts at York Minster, and are equally well executed. The west door, now stopped, is one of great richness and beauty, and bears a strong resemblance to the doors of the Continental churches; being a double door with a square head to each aperture, and the place above filled with good niches. The general design of the doorway is French; but the mouldings and details, English. There is an organ screen at the entrance into the choir, and one or two ancient monuments. The crypt, under the choir and chapter-house, is not equalled by any in the kingdom. It is, from the fall of the ground, well lighted, and is an uncommonly rich specimen of early English. The piers and groining are of the most intricate character, the most beautiful design, and excellent execution. The groins have rich bosses, and the doors are much enriched with foliage and other ornaments; the piers have fine flowered ca-

pitals, much like those in York. This church, like many others in Scotland, is not known or studied so much as it deserves to be."

The plates contained in this work are:—1. Niche in crypt, beneath chapter-house. 2. Cathedral of Glasgow from the Necropolis. 3. Plan of cathedral. 4. South elevation of nave. 5. South elevation of transept and choir. 6. East elevation. 7. Great western doorway, &c. 8. Transept, with parts of nave and choir. 9. Spire. 10. Transverse section through choir and crypts, looking east. 11. Longitudinal section of nave through the centre aisle. 12. Longitudinal section through choir, Ladye Chapel, crypt, &c. 13. Windows, &c., in nave. 14. Details from nave, &c. 15. Organ gallery and doorway to choir. 16. Organ gallery details, &c. 17. Western elevation. 18. Interior of cathedral from the west. 19. From crypts. 20. Ladye Chapel. 21. Compartment in Ladye Chapel. 22. Details of Ladye Chapel. 23. Blackadder's Aile. 24. Chapter-house details. 25. Plan of crypts. 26. Doorway to crypt beneath the chapter-house. 27. From crypts, &c. 28. South entrance to crypts. 29. Capitals of main pillars of choir. 30. Bosses. 31. Crypt under Ladye Chapel, Jociline's tomb, &c. 32. Nave from south transept. 33. Descent from nave to the main crypt. 34. Chapter-house, looking south.

It is almost unnecessary to add, that Mr. Collie has rendered an important service to the architectural world by this publication.

ART. IV. *Ornaments in every Style of Design, practically applicable to the Interior of Domestic and Public Buildings, and intended for the Assistance of the Architect, Builder, Upholsterer, and Decorator; manufactured in Papier Mâché; comprising Examples used by the most eminent Architects of the present Day in the Erection of public and private Edifices.* By Charles F. Bielefeld, Modeller, 18. New Road, Fitzroy Square. 4to. London, 1836.

WE have before expressed our high approbation of this work; the fourth series of which contains numerous ornamental designs, on the importance of which to the improvement of architectural taste we have much to say, when we can find leisure and space. It is a very common idea, that, if London houses were built of stone, and at ten times their present expense, they would be more durable: though this is very doubtful; for it is well known that mortar and stone will not unite nearly so well as mortar and brick. It is also evident, that, if houses cost more in building, and especially their decorative parts, the progress of taste in architecture would not be half so rapid.

ART. V. *Literary Notices.*

THE following works are in course of publication, or have recently been published, by Mr. Williams:—

Plans, Elevations, and Sections of Mr. Hopper's Design for the New Houses of Parliament.

The History and Antiquities of Chartham Church, Kent. By W. Caveler, Architect. Subscribers' names are received at Mr. Williams's.

Mr. Blackburn is preparing a new work, *On the Pointed Architecture of England during the Middle Ages*, which will appear in numbers.

Bree's *Original Designs for Furniture, Architectural Decorations, &c.*, in all the different styles of Architecture, will very soon appear.

Caveler *On Stained Glass*, with many brilliantly coloured plates, will shortly appear.

Mr. Arundale, a pupil of the late Augustus Pugin, who has been making a professional tour in Syria, Egypt, and the Holy Land, will shortly publish, from drawings taken on the spot, *A Series of Twenty-four Illustrations of the most interesting Views between Grand Cairo and Beirout*; including the Desert and Convent of Mount Sinai, the City of Jerusalem, Tyre, Sidon, Nazareth, Bethlehem, and Mount Sinai. Price 21s.

Mr. Williams's *Select Catalogue of Works on Architecture, Engineering, and the Fine Arts*, recently published, or imported from the Continent, has just been published. It consists of 28 pages, and contains 3 woodcuts.

MISCELLANEOUS INTELLIGENCE.

ART. L. *General Notices.*

WATER-CLOSETS on an improved plan, and not liable to be out of order, have been recently introduced by Mr. Ody, of the Strand. In Mr. Ody's plan the small appendages, such as the service-box and valve, the spring lever and pipe to conduct the wire, the air-trap, &c., have been dispensed with. All the necessary apparatus being under the seat, any obstruction can be removed in a few minutes. Architects, builders, and others, by applying at Mr. Ody's, can have the improved water-closet explained, and plans, elevations, sections, &c., of it given to them. In the College of Surgeons, Lincoln's Inn Fields, and Messrs. Twining's new tea warehouse, Strand, the improved water-closets are being put up. The cost of a single water-closet is 8l. — *Tyro. Wilmington Square.*

Perkins's patent Cooking Apparatus.—The novelty of this system of cookery is that of cooking the meat, fish, poultry, &c., in their own juices, through the medium of *dry steam*, thereby perfectly preserving the flavour, and at the same time rendering the article much more tender than by any other method now in practice, *Dry steam* is steam not completely saturated with water.

It is perfectly invisible in the atmosphere, and is very favourable for cooking almost every article, in a very superior style, with very little attention. The principal reason why the French excel in the art of cookery is, that they pay great attention to the temperature of the apparatus, so that it may never get up to the boiling point while the cooking is going on. It is a peculiar property of this system, that the contents of the vessel in which the food which is to be cooked is placed can never, with the most rapid boiling, get up to the boiling point. It is very true, that the temperature of water cannot get above 212° , by the most rapid boiling, when it is exposed to the atmosphere; but, for want of rapid circulation, which is the novel feature of this system, the water is often repelled from the bottom by an excess of heat, allowing the more ponderous matter in the boiler to settle, and become carbonised, and, of course, destroying the flavour of the article dressed. It is really astonishing how moist and juicy a round of beef or a ham will be found after having undergone the process of Perkins's apparatus; and it proves the truth of what was said by a very clever cook, that "the right way to *boil* corned beef is *not to let it boil at all*." It is also a curious fact, that an egg cannot be hardened by this process. The cooking will consume about one third more time than the ordinary method. No water should ever be put into the inner vessel, except when broth, soup, or other savory dishes, are to be made; it should, however, be observed, that much less water serves, even for these dishes, than when dressed by the ordinary method, on account of there being no loss by evaporation: many of the vegetables, such as spinach, &c., require no water. Confectioners and pastrycooks will find it much to their interest and comfort to adopt this system, particularly for their jellies, &c., since no stirring or watching the fire is necessary. A little practice will teach the experienced cook all that is necessary. A round of beef or joint of mutton requires nothing more than its own juices for moisture; neither does a ham nor a leg of pork require any water. Made and sold by John Lee Benham, sole proprietor of the patent, Wigmore Street, Cavendish Square.

A new Article for stuffing Mattresses, Beds, Chairs, &c. — As this Magazine embraces upholstery, as connected with architecture, we have great pleasure in giving publicity to what we consider a very important improvement; viz. the employment of a new article for stuffing, as a substitute for horsehair straw, flock, cotton, alga marina, and various other substances in general use for seamen's hammocks and bedding, soldiers' mattresses and pillows, for the use of schools, poor-houses, lunatic asylums, prisons, convict ships, and other large dormitories. The article alluded to is the coir, or fibrous covering of the cocoa nut; and, though it has been long used in India and China, for almost every purpose for which a tough fibrous material can be employed, yet its application to those purposes in this country seems to have been reserved for Captain Wildey.

The advantages which this substitute for horsehair possesses over all other materials used for similar purposes are, according to Captain Wildey, as follows: — 1st. That it can be furnished at less than half the price of horsehair; that its elastic properties approach that material nearer than any other substance known, not being liable to get into hard knots, like flock, cotton, tow, or other articles used for the same purpose. 2dly. This substitute will be found both sweet and wholesome, as it will not be affected by damp or moisture, neither can it be injured by salt or fresh water, possessing advantages over every other substance, as vermin will neither harbour or breed in it; an advantage alone of the utmost importance in a barrack or other large dormitory. This substitute, from its durability, will, in the end, prove a great saving to government, whenever it is introduced into general use in His Majesty's service, or to any individual institution which might adopt it, as it will be unnecessary, from the durability of this filament, to make any change in it till the covers of the bedding and pillows are completely worn out, which would not be for several years; when the stuffing, on being immersed an hour or two in water (with a handful of salt thrown on it), and dried in the sun, may be put into new covers; this simple process being quite sufficient to restore all its elastic qualities. 3dly. The use of this substitute in barracks will entirely supersede the frequency of changing the straw in the army; a matter not easily accomplished in wet weather without its inflicting a certain portion of damp, thereby tending to create vermin and the decomposition of the straw. Added to this, the heat and moisture from the soldier, whether in Europe or in a tropical climate, cannot fail, more or less, to injure his health and cause disease. Another advantage, of high importance, not only with regard to cleanliness and health, as connected with the barrack and barrack-yard, will be found in the use of the substitute, as it will entirely do away with the nuisance of burning the condemned straw from the soldiers' bedding, which in wet weather is not easily done, and in windy weather too frequently strews the barrack-yard with its half-burnt remains. 4thly. Great

advantages will arise, also, from this substitute being manufactured into traces for artillery, from the lightness and durability of the material, as well as its elastic qualities, not being so liable to snap asunder, as traces made of hemp or leather, on a sudden start of the horses in dying artillery. It will be found equally as useful for drag-ropes in foot artillery, and can be applied to various other military purposes; particularly when a river cannot be forded, a communication may be made with the opposite bank by a small buoy, with grappling-hooks in it, attached to a rope of this manufacture, as both the buoy and the rope would float across with the stream. Cable bridges or rafts might be made in short pieces, so as to be carried in the inside of pontoons, by the aid of which a certain number of men may be transported across a river in a few minutes.

The same advantages will be found in the use of the substitute for horse-hair by every class of society, with regard to health and cleanliness (as those of the navy and army), who sleep upon beds and mattresses filled with flock, mixed animal hair, alga marina, cotton, tow, and other unwholesome, contagious, and unprepared substances.

The printed paper from which the above paragraphs are taken contains the testimonials of a medical man and some experienced officers of the army and navy, as well as that of a surgeon, in favour of what is asserted by Captain Wildey.

ART. II. Foreign Notices.

FRANCE.

CAEN, Normandy, September 4. 1836. — It is pleasant to see the striking proofs of prosperity which Caen exhibits. New houses are springing up on all sides : even whole streets of them, besides a superb new theatre and other public buildings ; and all of hewn stone of a beautiful colour and texture, and which is often ornamented by bas-reliefs, &c., in good taste. One of these houses, in a back street, meant for a single shop, has a frontage not much short of 100 ft. The only drawback is, that, as all the stone, which greatly resembles Bath stone in its colour, softness, &c., is brought in vast masses, often of from 50 to 60 cubic feet each, and all cut and worked on the spot, the streets every where resemble stone quarries, with men, by dozens and scores, sawing, chipping, and carving, in all directions. The new houses at Caen, which are chiefly of a superior class, are not deceptive, like those at Paris (where, in the Rue de Rivoli, though the fronts and partition walls are stone, all the back parts, and the extensive courts, are of timber framework, lathed across on both sides, and filled up, as the laths are nailed, in the roughest way, with refuse-stones of all shapes and sizes, mortar being dashed in between them with the hand, and the whole smoothed over with a coating of plaster) ; but are really what they seem — wholly of stone ; the end walls between house and house usually of stones of no great size, roughly dressed ; but the front, backs, and interior walls, of stone of large dimensions, hewn smooth on both sides ; so as that the walls are but of the thickness of one stone, which, in the front and back, is from 12 in. to 18 in. thick, but in the inner division walls often not exceeding 5 in. or 6 in., and in front of the chimneys not much above 2 in. Here, as in England, and, indeed, almost every where on the Continent, economy in materials and space seems the great aim ; the walls being pared down to a thickness barely sufficient to give support to the joists, which, as with us, are made to compensate, by their great depth, for the now generally discarded cross-beams ; and the rooms, unlike those of the spacious and certainly more convenient habitations of former days, being reduced both in number and size to the minimum of accommodation. A new house, answering to the second-rate ones of London, I was told, may be built or bought for about 30,000 francs (1200*l.*) Gas pipes are being laid down by English workmen in all the streets ; and, in the principal ones, *trottoirs* (or flagged foot-pavements) are begun ; in which, instead of, as at Paris, exposing the pedestrian to a constant interchange of up and down, by placing curb-stones on each side, wherever the path is crossed by a carriage-way to the *porte cochère* of a large house, they discard

curb-stones there, and have given a gradual descent for a couple of feet to the flags on each side of these crossings of a lower level, which, by this rational plan (which I first saw adopted at Rome, in 1830, and well deserves imitation in our English large towns), are passed almost insensibly, and cause no shock or interruption, however often they occur. Another improvement at Caen is, that all the names of the streets on the corners are painted in black letters on oval plates of porcelain, glazed and baked subsequently; and are thus much more legible and durable than when painted on tin or wood. This plan is also adopted at Bayeaux, and even as to the numbers of all the houses.

— *W. S.*

GERMANY.

Berlin. — The magnificent palace for Prince William, at the entrance of the Linden Street, is rapidly proceeding towards its completion, and will, it is expected, be in fit state to be occupied by His Royal Highness in the course of the present autumn. Immediately in front of it is to be erected a monumental cast-iron column in honour of Frederick the Great. Another important architectural work is the new edifice for the library, which has been long greatly wanted, the present one being quite out of repair, and not sufficiently extensive for the increased collection of books.

Brunswick. — The new palace, after the style of that called the Pitti, at Florence, is 400 ft. in front by 200 ft. in depth, and has three orders of columns, the first of which are 36 ft. high and 4 ft. in diameter. The roof is covered with plates of cast iron, of which material is likewise the upper cornice; and this latter is enriched with lions' heads of a pale gold colour. The entrance on the right and left is so contrived, that the Duke can ride up to the vestibule above on horseback. The interior is splendid; and the apartments in the left wing will be ready to be inhabited almost immediately. — *W. L. H.*

RUSSIA.

St. Petersburg. — Within the three last years, this capital has extended itself greatly. New streets have been erected in various directions, in parts which were formerly quite beyond the boundaries of the city; and numerous other improvements are in the course of taking place; one of which is to convey an abundant supply of water from the Neva to all parts of the town. The works of the St. Isaac's Church are now proceeding with great rapidity, no fewer than three thousand men being employed on them daily during the present summer. Of the twenty-four granite columns (each of a single piece, 42 ft. high) which are to adorn the exterior of the dome, fifteen are already erected, and the remaining nine have been prepared at the quarries. At present, the forest of scaffolding which surrounds the edifice renders it impossible to judge precisely what the effect will be; yet there is little risk in predicting that, when completed, it will prove the most stupendous architectural monument of modern times; not, indeed, altogether the rival of St. Peter's at Rome, as far as depends upon actual dimensions alone, but eclipsing it both in splendour of materials and in grandeur of style. — *Id.*

ART. III. Domestic Notices.

ENGLAND.

*THE Members of the Institute of British Architects, who were Exhibitors of Parliamentary Designs, have, with only two exceptions, presented their shares of the proceeds to that institution, for the purpose of being laid out in some series of books or works of art, and by this means to increase the library or collection. The sum amounts to about 100*l*. This seems a purpose well worthy the high-minded individuals, who have thus acted with a liberality which deserves imitation.* — *C. D.*

The general Architectural Improvement of London. — We are happy to see that this subject is attracting the attention of Parliament; Mr. Alderman Wood has obtained a select committee to consider the propriety of a new street from Southwark Bridge to the Bank of England; another from Waterloo Bridge to the New Road; a third, from Lothbury to the Post-Office; a fourth, from the Post-Office to Smithfield; a fifth, from Holborn to the Strand; a sixth, through Southwark; a seventh, from St. Paul's to Blackfriars' Bridge; an eighth, from Oxford Street southwards; and a ninth, from Westminster Abbey to Belgrave Square. Sir Robert Peel hoped that an enlarged view would be taken of the subject, and that the house would not fall into the error it had committed with respect to railroads. Perhaps the best mode of proceeding with railroads would have been to appoint competent persons to survey the whole country, and to report upon the most eligible lines; but, though it was now too late to take that course, something of the same kind might be done, with a view to the contemplated improvements of the metropolis; and, before money of any kind were expended, some foresight ought to be used as to the future extension of London. If commissioners could be found, in whom the public would have confidence, for a rational and comprehensive plan, it would be a subject of much congratulation. (*Morn. Chron.*, June 17.) In this Magazine and in the *Gardener's Magazine*, several years ago, we have repeatedly suggested the idea of the metropolis and its neighbourhood, to a certain distance to be determined by Parliament, being governed by a council or committee, who should devise and direct all useful and ornamental improvements, &c. The error, in this country, has hitherto been, that public improvements, which ought to emanate from governments, either local or general, have been carried into execution by companies. Even laws have originated and been promulgated in this way, instead of originating in a government minister appointed for that department, as has lately been shown in the House of Lords, in a speech by Lord Langdale, remarkable for its enlightened, comprehensive, and, at the same time, practical views. It is hardly possible that the plans of any public company, however wealthy or enlightened, can be so comprehensive, and so well calculated to benefit the whole public, as those devised by the representative of that public, viz. the government. This is always supposing, however, that the individuals composing the government are on a par, in point of intelligence, with the individuals likely to form the governors of the companies alluded to. — *Cond.*

Visits of foreign Architects to England. — Baron Von Kleuze, architect of the Glyptotheca and Pinacotheca at Munich, has recently visited this country, and been to Liverpool and York to see our works of art and manufactories. We understand that he expressed himself much pleased with what he has witnessed, and the results of the mechanical skill which has been so highly cultivated of late years in Great Britain. The Baron has expressed himself deeply gratified with the attentions which he has received on the part of the members of the Institute of British Architects, of which body he is an honorary and corresponding member.

Monsieur Blouet, the author of the admirable work on the Baths of Caracalla, architect of the scientific expedition to the Morea, and under whose direction the Barrière de l'E'toile has been recently completed and opened on the anniversary of the *three glorious days* of July, has just left London, after a stay of a few days. The vastness of the city, and the judicious arrangements of our parks, which have no parallel feature at Paris, were the objects with which he seemed the most struck. Our public buildings appeared to interest him much, and not to have, on the whole, produced those unfavourable impressions which some reviewers and critics of the present day seem to consider as the only possible result of the public buildings of England. We have no doubt that, when our artists are furnished with the means which are placed at the disposal of those at Paris, Munich, and Berlin, they will produce monuments of art worthy the occasion. The Arc de l'E'toile has cost 400,000*l.*; and our representatives are squabbling about granting only twice that sum for our new Houses of Parliament. — *W.*

Greenwich Railway. — An entrance, having the form of a triumphal arch, is to be erected near St. Thomas's Hospital to the Greenwich Railway. — *Tyro. Wilmington Square.*

An Equestrian Statue of the Duke of Wellington, of bronze, and mounted upon a plain pedestal, is in contemplation to be erected on the Borough side of London Bridge. — *Id.*

Metropolitan Benefit Society's Asylum. — The first stone of a new building for the society was laid by the Lord Mayor, on the 17th of August last, on a piece of ground next to the almshouses (see Vol. II. p. 465.) at Kingsland. — *Id. October 1.*

Waterloo Place. — An elegant cast-iron pillar, supporting three handsome lamps, mounted upon a granite pedestal, and enclosed with an ornamental iron railing, has just been finished, on the spot intended to have been occupied by the equestrian statue of George III., near Waterloo Place. — *Id. July 1.*

The German Chapel in St. James's Park, and facing the east side of St. James's Palace, is being repaired. The buildings adjoining the north side, which faces Pall Mall, have been cleared away; and a front of an architectural character is being added. — *Id.*

A new Brewhouse is now being built for Messrs. Goding, on the Surrey side of the water, close to and facing the river Thames, and near to the Commercial Road, near Waterloo Bridge. The building, which is of a large size, and which is now being covered in, will form a fine feature from the Middlesex side of the Thames. The river front will be rather imposing, having greater pretensions to architectural display than brewhouses generally have. More buildings are projected near the spot; and those of your readers who really like their profession may gain much practical information by turning their attention, in leisure hours, to the various new buildings now being erected in that neighbourhood. — *Id.*

A new Chapel, situated in Trinity Street, and facing Trinity Terrace, Borough, is now being erected. The front and sides of this building are to be faced with bricks of a light colour; but the pilasters, entablature, &c., are to be worked in cement. — *Id.*

A new Chapel, in the Italian style of architecture, entitled "Trinity Chapel," and situated in Great Suffolk Street east, leading into Blackman Street, Borough, has just been completed. The whole of the front is faced with stone. — *Id.*

St. George's Fields. Bethlem Hospital. — This admirable institution, which has been for a considerable time looked upon as an important architectural feature, is likely to be much injured, by the erection of a high blank wall enclosing a large piece of ground in front of the hospital; prior to this addition, there was an excellent footpath close to the building, from which might be seen the details of the front; but the building can now only be viewed from the distance. — *Id.*

An ornamental Obelisk, supporting gas lamps, has been, also, recently set up, a little beyond the New Indigent Blind School, in St. George's Fields. — *Id.*

The Area between the New Post-Office and St. Paul's has lately been enlarged by the pulling down of some houses; but, unfortunately, enough are left standing to show the incompleteness of the plan, and to render the improvement one of the least satisfactory that has lately taken place in the City. — *R. W. Tower Hill.*

King William Street, City. — The houses forming the circular part of King William Street, near Gracechurch Street, are being erected: they are to be faced with bricks, and the three-quartered columns, pilasters, entablature, &c., are to be in cement. The brassummers to the shops of these new buildings are of cast iron. — *Tyro. Wilmington Square.*

One additional Feature which has been made in this street, is the ornamental iron railing which encloses St. Mary Woolnoth in the front, with a semicircu-

lar sweep, and is continued on the south side, in a line with the houses. The greater part of the boards, which have so long disfigured that portion of the street during the progress of the buildings, is removed; and, when the remainder is taken down, and the railing brought home to the house which is intended to occupy the site, it will present a neat and lively appearance. It would, I think, be a great improvement if a similar ornamental railing were put up in the place of that wooden fence which now stands before St. Saviour's Church, upon the end of the foot-pavement. This, when viewed in relation with the Ladye Chapel from the opposite side of the way, would tend greatly to increase the effect. — *Frederick Lush. September, 1836.*

Provincial Cemeteries. — A company is now forming in London, patronised by six members of Parliament well known for their liberal principles, the object of which is to further the erection of cemeteries in different parts of the kingdom. The intention of the company is to advance "one half, or, if necessary, a greater proportion, of the capital requisite for each undertaking, on being allowed a corresponding proportion of the profits, provided that the company approve of such intended cemeteries; and provided that the act of Parliament for the incorporation of each local company contains no invidious distinctions between churchmen and dissenters." We hope these cemeteries will be large; and that one condition of planting them may be, that there shall not be more than two of a species or variety of whatever shrubs or trees may be considered necessary for ornamenting them, and that these varieties or species will be named, so as that, to a certain extent, the cemetery may answer the purpose of an arboretum. We must observe, however, that the idea of forming a company for the purpose of aiding country towns to establish cemeteries, or public gardens, or public improvements of any sort, is not at all in accordance with what we consider proper domestic legislation. No one knows this better than the patrons of the intended company; but we suppose that they find that they cannot do better at present. Cemeteries, public gardens, museums, &c., ought to be formed, whenever they are required, by the municipal corporations, or rather representatives, of the town, village, or parish, at the expense of the rate-payers, and for their benefit; in other words, at the expense of all, for the benefit of all. — *Cond.*

Hunter's Patent Stone-planing Machine (noticed Vol. II. p. 283.) may be seen at work at Mr. Braithwaite's foundry, Edward's Street, Regent's Park Basin; where stone, slate, and marble are planed on very reasonable terms. This new application of the power of steam, by cheapening pavement of every description, cannot fail to have a beneficial influence on the footways in and about London; and we hope it will, at no distant period, lead to laying down parallel strips of pavement along the gravelled footways all over the country, and more especially in the neighbourhood of large towns. At all events, we trust that this improvement, as suggested Vol. II. p. 134., will soon be tried in the neighbourhood of London. The effect of the machine will also be found in the construction of stone staircases and partitions; which, in iron framing, would go far towards rendering houses fire-proof. — *Id.*

The Idea of taking Bird's-eye Views of Estates from Balloons has been suggested by Lord Clanricarde; and, since the suggestion, Mr. Burton, an artist in Savoy Street, Strand, has described to Mr. Green a mode of carrying the idea into effect. "The inventor proposes to build a waggon, for the purpose of fastening a balloon to it; which, when filled with gas (which can be done in various parts of the country, at gas companies' gasometers), may then be conveyed to any place a surveyor requires, where, on a calm day, he can ascend and take plans, carrying with him the proper instruments. The balloon will then be fastened with ropes to the spot most favourable for observation, and raised to an elevation of 300 ft. or 400 ft., as necessary. In this way a bird's-eye view can be taken of any town or city. Mr. Green is willing at any time that his balloon, by way of experiment, may be made use of in that way." (*Morn. Chron., Aug. 11.*)

Road-making. — The new composition of tar and "lava stone," for which

a patent was granted to Mr. Cassell, is now being laid down in Whitechapel Road. Something of this kind was introduced, about four years ago, at Clapham, by way of experiment. — *Frederick Lush. September, 1836.*

Bedfordshire. *Earl de Grey's new Mansion*, now erecting at Wrest Park, will, we understand, be a stately pile of Grecian architecture, with four stone fronts, enriched with sculpture, and in every way worthy of the noble President of the Institute of British Architects. His Lordship is, we are informed, his own chief, if not sole, architect. — *W. L. H. Bedford.*

Berkshire. Reading. — A new Blue Coat School, in the pointed style of architecture, is now being built in the town of Reading. The front is faced with Bath stone, as also are many of the modern edifices, on account of its being cheaper than bricks. In the walls no bond timber of any kind is used ; and the partitions, instead of being constructed of wood, and framed, are of this stone. This mode of building is common at Reading : even when the kitchen and other offices form part of a house, the walls are still only 5 in. in thickness, and of stone. Although this is a cheap way of building, I do not consider it by any means substantial ; for, in case of a settlement, a crack in a 5-in. wall would let the weather in. — *Tyro. Wilmington Square.*

The Committee for promoting the "Royal Berkshire Hospital" have invited architects, "being principals," to send in designs and estimates, in accordance with certain particulars, to be furnished on application to C. S. Robinson, Esq., or H. F. Letchworth, Esq., of Reading, the honorary secretaries. We have been favoured with a sight of the lithographed plan of the site ; by which the ground appears to be nearly of a square form, and to contain exactly four acres ; and the diagonal of the square is very nearly a north and south line. On the north and west sides, the square is bounded by public roads. The premiums for designs are 50*l.*, 30*l.*, and 20*l.* The following is a copy of the particulars : —

1. The designs to be drawn in sepia, and on a scale of 4 ft. to 1 in.
2. No models to be admitted.
3. The hospital to be built of brick, cased throughout with Bath stone, and to face the London Road, at the distance of 100 ft., occupying a central position from east to west.
4. The expense of the building (without enclosures) not to exceed 6000*l.* ; and accommodation to be afforded for sixty beds in the wards, besides suitable apartments for the usual officers of the institution.
5. The building to be so constructed as to present an appearance of completeness, especially in front, but admitting, without violence to its architectural character, and by easy adaptation, of sufficient enlargement to accommodate forty additional beds.
6. The entrance-hall and principal staircase to be of stone.
7. Care to be taken that the staircases and passages shall be of ample dimensions for the purposes of an hospital.
8. The windows to be carried to the ceiling ; and fireplaces, not flues, to be in the several rooms.
9. One room on the ground-floor to be adapted as a bath-room.
10. Provision to be made for a cistern or cisterns, to afford an adequate supply of water to every part of the building.
11. The royal arms to appear on the front of the building.
12. The estimate to state the price upon which the calculation is made of timber per foot ; brick per rod ; stone per cubic foot.
13. The depth and thickness of the walls at the foundation, and their thickness at the several floors of the building, to be stated ; together with the substance of the timbers to be used throughout the edifice.
14. All drainings and sewers to be included in the estimate.
15. The land, upon being surveyed, is found to be very nearly a level ; and the soil, as indicated by an excavation 10 ft. deep, is a dry gravel.
16. Regard to ventilation to be considered a primary object.

Improvements at Windsor. — The tenements near the Long Walk, at the entrance to Park Street, have been purchased by the Commissioners of Woods and Forests ; and they intend to have them removed, to form in their place a shrubbery, with a neat palisade. — *Frederick Lush. September, 1836.*

Devonshire. Kingsbridge. — A new workhouse is to be immediately built at Kingsbridge, to accommodate 350 paupers. Architects are invited to

compete, and the various works are to be contracted for. — *Tyro. Wilmington Square.*

Plymouth. — We are rapidly improving at Plymouth. Several new lines of houses are erecting from elegant designs by Mr. Wightwick, and also a new hospital, a woodcut representing which, and a description, are published in the *South Devon Monthly Museum*, No. xxxiv., for October, 1835. It is also contemplated to erect a building for horticultural exhibitions, the design for which is already prepared by Mr. Wightwick. — *H. B. Plymouth, July, 1836.*

Dorsetshire. Beaminster. — A new workhouse, from the designs, and to be erected under the direction, of H. S. Whitling, Esq., architect, is to be built on a piece of ground about one mile from the town of Beaminster. The present number of paupers is about 230. — *Tyro. Wilmington Square.*

Bridport. — A new workhouse, from the designs and under the superintendence of John Whitling, Esq., is to be immediately erected at Bridport, to accommodate 200 paupers. The various works are to be contracted for. — *Id.*

Essex. New Schools, with master's house, &c., for the "Fawbert and Barnard's Charity," are in course of erection at Harlow, from the very elegant and chaste designs of Robert Abraham, Esq., of Torrington Square. The contract for building them was taken by Mr. Cheffins of Bishop's Stortford, at 1275*l.*

Colchester. — A new workhouse, from the designs and under the superintendence of Mr. John Brown, of Norwich, is to be erected at Colchester. The various works are now being contracted for. — *Id.*

Epping. — A new workhouse is to be erected at Epping, from the designs and under the direction of Sampson Kempthorne, Esq. The various works were put out to contract. — *Id.*

Herefordshire. Ross. — A new workhouse is to be erected at Ross, for the accommodation of 160 paupers. The various works were contracted for. — *Id.*

Hertfordshire. Bishop's Stortford. — Thirty-eight designs were sent in for the new workhouse; and, after much discussion, the Board awarded the premium to Mr. T. Le Evans, of London. Mr. William Cheffins of Bishop's Stortford obtained the second place. The plan, which is taken from Mr. Kempthorne's Hexagon Workhouse, No. 10., was afterwards confided to Mr. Nash of Royston, by whom it has been judiciously altered and improved. Tenders for the works were sent in on June 26; when Messrs. Glasscock, Perry, and Son were the successful contractors, at the sum of 9175*l.* The works are already in active progress. — *B. S. Bishop's Stortford, July 25. 1835.*

Buntingford. — A new workhouse is to be erected on a piece of ground in the parish of Layston, adjoining the town of Buntingford. The various works were put out to contract. — *Tyro. Wilmington Square.*

Hatfield House. — The repairs of this noble building are proceeding rapidly; and the greatest care is being taken to restore the former appearance of the building as exactly as possible. — *C. M. Hertford.*

Hoddesdon. — A fanciful and ornamental erection has just been completed at Hoddesdon. It contains an engine-house, watch-house, vestry-room, &c. — *Tyro. Wilmington Square.*

St. Alban's. — A new workhouse is to be immediately erected on a piece of ground situated in the parish of St. Michael, and near to the town of St. Alban's. The various works are to be put to contract. — *Id.*

Watford. — A new chapel of ease is to be erected on Bushey Heath, and near to the town of Watford. — *Id.*

Kent. Herne Bay is about to possess a grand and valuable ornament, through the munificence of Mrs. Thwaites, who has chosen the bay for her summer residence for the last two seasons. In the enclosure near the pier this lady has given directions for the erection of a Grecian temple, 70 ft. high, on the top of which is to be fixed a clock. The fabric will be of a quadrangular form, supported at each corner by pillars of the Corinthian order. At the top will be a cupola, or dome, immediately beneath which the clock, with four illu-

minated dials, will be placed. Every exertion will, we understand, be made to commence the work in the first week in October. Mrs. Thwaites, it is said, will lay the first stone. Preparations are in progress for making the day one of general rejoicing and festivity. (*Morn. Chron.*, Aug. 26.)

Lancashire. Manchester. — The following rooms are to form one handsome building, to be erected on the site of the present Exchange buildings; namely: — A spacious exchange-room, news-room, Lloyd's-room, post-office, a room for the accommodation of the Chamber of Commerce, a room for public meetings, a room for public sales, brokers' offices and chambers, a library, and other apartments for such purposes as may be considered advantageous to the public. — *Tyro. Wilmington Square.*

Leicestershire. Leicester. — A general news-room, with a library, is to be erected in the town of Leicester: it is to form a handsome building, to be built similar to the news-room and library situated in Moseley Street, Manchester. The sum to be laid out is 3000*l.* — *Id.*

Lincolnshire. Lincoln. — An elegant new chapel, entitled "Wesley's Chapel," has just been completed in the town of Lincoln. It is in the Grecian style of architecture, having its front and sides of brick and stone. A porch, supported by columns of the Ionic order, shelters the entrance. This chapel, like many others, is, unfortunately, situated in the rear of the houses facing the street, and consequently is partly hidden from view. — *Id.*

Stamford Bridge. — The foundation-stone of a residence on a splendid scale was laid, on the 19th of July last, by C. Darley, Esq., in the neighbourhood of Stamford Bridge. It is to be erected from the designs and under the superintendence of A. Salvin, Esq., of London, Architect. — *Id.*

Somersetshire. Bath General Cemetery Company. — The following is an estimate of the costs of constructing a cemetery (to be within two miles of Bath) on fifteen acres of land, of freehold tenure, and of good access; viz: —

Preliminary expenses, advertisements, &c., costs of act of Parliament, purchase of land, &c.	4500 <i>l.</i>
Fencing, iron railing, walling, and gates	1900 <i>l.</i>
Excavation and embankments, masonry, &c.	2000 <i>l.</i>
Erecting 3 chapels, residence for superintendents, and observatory	5000 <i>l.</i>
Planting and laying out ground with evergreens and flowers, walks, &c.	600 <i>l.</i>
Contingencies and unforeseen expenses	1000 <i>l.</i>
	<hr/> 15000 <i>l.</i>

The whole of the ground will be laid out and planted after the manner of the cemetery of Pere la Chaise, and surrounded with an ornamental enclosure of sufficient height. — *Id.*

Clifton Suspension Bridge. — The foundation-stone of the south pier of this bridge was laid on August 27. 1836. The following are the principal dimensions: — Distance between the two points of suspension, 700 ft.; length of suspended roadway, 630 ft.; height of roadway above high-water mark, 230 ft.; total width of floor, 34 ft. I. K. Brunel, Esq., F.R.S., engineer. (*Extract from the inscription on the foundation-stone, as quoted in Lit. Gaz.*, Sept. 24.)

Works at Clifton Bridge. The works, which are proceeding on the Leigh Wood side, for carrying on the masonry of the buttment, are going forward with great celerity. The new bar has been passed across the Avon, under the superintendence of Mr. Brunel; and the plan adopted by the contractors for bringing up the materials to the place of work is well contrived, and shows a great saving of labour. From the summit of the rocks, upwards of 800 ft. in height, descends an inclined plane of timber, upon which travels a carriage on iron tramways, worked up and down by an endless rope, led on to a drum-wheel at the bottom. Two tons of stone or other material are

raised by two horses in the space of about five minutes. — *Frederick Lusk. September 15. 1836.*

Kingston upon Hull. — The foundation-stone of a new college was laid on Friday, the 29th of July last, by Richard Bethel, Esq., M.P. It is being erected upon a field of good extent, situated on the left-hand side of the Beverley Road to Hull, and close to the latter town. The college is to be in the Old English style of architecture, faced with bricks of an even red colour; and the window dressings, door-heads, jambs, &c., are to be worked in stone. — *Tyro. Wilmington Square.*

Newland. — A neat chapel, in the pointed style of architecture, has recently been completed. It is situated in the village of Newland, facing the high road from Beverley to Hull, and has been built for the accommodation of the inhabitants of that part. — *Id.*

Scarborough. — Fourteen almshouses, for aged seamen, are now being erected upon a piece of ground adjoining Nesfield's brewery, at the sole expense of Mr. Richard Wilson of Scarborough. — *Id.*

ART. IV. *Retrospective Criticism.*

REVIEW of "*Parasay's Perspective Rectified.*" (p. 409.) — Mr. Gribble of Torquay, in noticing my work, states, he was "struck with my method of drawing in perspective without the aid of vanishing points," it being, as he says, "precisely the same as occurred to (him), and was put into practice more than seven years ago." If my principles had precisely occurred to Mr. Gribble, he ought to have found that "the common and complicated process of finding the vanishing lines to which the centrolineads are to be adjusted" was no longer complicated, and that mine is a method more ready in principle and practice than either. As Mr. Gribble has had seven years' practice in my methods, he will be able to favour your readers with my method of finding proportional points on a decreased line without vanishing points or the use of the centrolinead; by which method the more the point is inaccessible, the more my system is accessible. The immediate communication of that method to the readers of this Magazine can alone remove from my mind the idea that Mr. Gribble purposes forestalling my originality, and underrating the practical utility of my new methods.

I was about to communicate it myself; but I shall withhold it, and some other equally important points, for a time, lest Mr. Gribble should say that "precisely the same occurred to him, and were put in practice by him seven years ago." As the lines from which vanishing lines are drawn have not been drawn by any perspective rule, the centrolinead has been adjusted to false lines: the true lines can only be produced by rectified perspective.

The centrolinead needs no puffing: Mr. Peter Nicholson invented that excellent instrument to help out the defects of the existing theories; and nothing can more fully prove the necessity of a true and practical theory of perspective than the want of such an instrument, which has been of great use to the architectural draughtsman. But when a simple method is discovered, which supersedes the use of it, the greater is the merit of that method, and none the less that of the invention of the instrument. Mr. Gribble says he has "no doubt whatever of the merits" of my work; but he thinks that "too much has been written on the subject; for," says he, "if the principles be once understood, no proposition can occur in its practice that will not, by a thinking person, be easily solved." Have the true principles of perspective hitherto been understood? My work is not a compiled, or new version of the old story; and, perhaps, this makes Mr. Gribble say "too much has been written" for the continuation of the false principles. In conclusion, let me ask any thinking person whether (as Mr. Gribble says) "one or

two lectures would be effectual in putting any one in possession of the principles?" — *A. Parsey. Strand, September 5. 1836.*

The Church of St. Michael, Bath. (p. 483.) — In some remarks of Tyro's on the church of St. Michael, that I am building in this town, he says, "I am afraid that some settlement has taken place in the tower, there being a large crack all down it, which has been once remedied, but has again appeared." Now, I can assure the readers of this Magazine, and it is easy for any one to satisfy himself of the fact, that there is not, nor ever has been, the slightest crack, or even the opening of a joint, in the masonry of the tower, from its foundation to its summit. It must be allowed that I have just cause to complain of Tyro's want of correctness: he has evidently (but how I can hardly understand) mistaken a slight and immaterial "crack," caused by a circumstance beyond the architect's control, in one of the lobbies, for "a large crack all down the tower." — *George P. Mannors. Bath, October 5. 1836.*

Mr. Varden's Suburban Villa. (p. 464.) — I have read Mr. Varden's paper on a design for a suburban villa with much interest; for it contains many very clever remarks, hints, and ideas, and may be taken as a good specimen of the kind of description which ought invariably to accompany a design. The observations are such as evidently show that Mr. Varden has bestowed a laudable degree of consideration upon the subject; although, for want of any other drawing than the ground-floor plan, it is impossible for me to judge whether the taste manifested in character and details would correspond with the well-imagined effects at which he has aimed. The particular kind of effect, indeed, which, where it occurs, let it be the result of accident or premeditation, generally tells for more than mere embellishment, seems to have principally engaged the attention of Mr. Varden; a merit or a reproach which the profession generally do not share with him.

Many will, perhaps, smile, and be of opinion that Mr. Varden has pushed his foresight in such matters to an almost ridiculous excess, when he descends to such particulars as "table-covers." I am not the person to censure him on that account: what I object to is, that, notwithstanding this minuteness, he seems to have overlooked one or two things more essential, and which, if not provided for at first, are apt to occasion great, if not irremediable, inconvenience afterwards; and, as Mr. Varden admits that what he has said is to be considered only as the outline of his ideas, he will the more readily excuse my thus calling his attention to what he has either overlooked, or omitted to explain. No scale is attached to the plan; yet, as he states the extreme width of the ground to be 90 ft., it must be in the proportion of one thirtieth of an inch to a foot. This being the case, there cannot, according to the plan, be quite 10 ft. in width at the bottom of the steps leading up to the portico; consequently, it will not be possible for a carriage to turn round there, and draw up before the entrance; which will assuredly be thought no little inconvenience; especially now, when it is almost made a *sine quâ non* that a carriage shall be able to set down company under a covered entrance. In the next place, he either has, or appears to have, forgotten something more essential than a matter of mere taste (which it certainly is not); no water-closet being indicated in the plan, although the locality of such place of retreat is an affair of some importance.

I cannot exactly make out whether this design is actually to be executed or not; but, if it is, I presume that it conforms with the instructions given: yet it certainly does appear strange to me, as it undoubtedly must to many others, that any one should think of erecting a house, containing only two sitting-rooms, and yet that those rooms should be of such large dimensions, and be fitted up with so much display, not to say ostentation. By no means do I hold with those who are of opinion that, in a moderate-sized house, every thing ought to be upon a small scale, and exhibit moderation in embellishment; or that architectural luxury ought not to be indulged in, except the whole establishment be conducted upon a scale of proportionate expense:

but here, it seems, while it is intended to have two rooms fitted up with a rather unusual degree of display, there are no secondary ones whatever, not even to afford that accommodation now considered almost indispensable for "a genteel family," who wish for the usual comforts of modern life. There is neither library, nor study, nor morning-room, nor private apartment of any kind; no place, except the vestibule, which a stranger can be shown into to wait, even though he should come upon business that might require a private interview. There are, what many would dignify by the name of two saloons, not "kept for show alone, and state," — quite the contrary, since there is no alternative but to use them on every occasion; which is not very much unlike a person's having only a full dress attire, and being consequently obliged to wear it from morning to night.

For this kind of inconsistency the architect is not to be censured. If a family, who can be content with such bachelor-like accommodation, as merely a dining-room and a drawingroom, are also anxious that they shall make a display seldom aimed at in private residences of far greater extent and pretension, and which are otherwise suited to an expensive establishment, so much the better for him; since it affords him a very favourable opportunity for showing how high a degree of architectural beauty and character may be accomplished within a comparatively small compass. When I say "inconsistency," I speak rather in accordance with what is likely to be the general opinion, than with my own feeling, since there certainly is no greater inconsistency in making a house a bit of a palace, than in making it a *make-believe* cottage where every thing announces luxury and opulence. Of the two, I should myself give the preference to the former; and would choose to indulge rather in the elegances and refinements of architecture, than to sacrifice them to other considerations. To my mind, therefore, a house of this description would be no more than a delightful "snuggery," for a bachelor who could afford it; nor should I consider the dining-room at all too large or too showy even for a repast *en solitaire*. Most other people, however, entertain very different notions in regard to such matters, few having any relish for that splendid solitude which the author of *Ma Boudoir* has given us a picture of. But I am now giving the reins to my truant imagination; therefore return to Mr. Varden and his design by saying that the objection likely to be urged against it is, that it does not appear very well calculated for a family residence, especially of a family, whose habits and tastes would, it may be conjectured, require rather more, if any thing, than usual in the way of accommodation. Mr. Varden, indeed, talks of economy; yet surely he, or his employer, will be thought to entertain extraordinary ideas of it: at any rate a dinner for twenty-six persons, although it should not be of frequent occurrence, cannot, if at all in a style commensurate with what would be expected from the appearance of the apartment where it is served up, be a very economical affair. However, economy, like many other terms, is one of only relative import; and it may, in this instance, mean an expenditure confined to 10,000*l.* a year.

I regret that the plan of the house was not given in a separate form, and on a larger scale; also accompanied with an elevation and section or two; for it certainly possesses several excellent points, and contains some ideas that might be shaped out in numerous different ways. As I do not perceive from the description anything which would militate against its being adopted, I conceive that it would be an improvement, and lead to other improvements, if desired, were the position altered, by turning it so that the drawingroom front should face the garden, or west, having the entrance to the south, and retaining the entrance-court where it is at present. But, without a plan, I cannot very well tell what else I should recommend to be done; and, as it might, perhaps, be considered somewhat presumptuous, and as taking too great a liberty, I content myself with these few verbal remarks, which I can hardly suppose Mr. Varden will be sorry to find his design has elicited. — *W. H. L. London, October 4. 1836.*

THE ARCHITECTURAL MAGAZINE.

DECEMBER, 1836.

ORIGINAL COMMUNICATIONS.

ART. I. *A summary View of the Progress of Architecture in Britain during the past Year, with some Notices relative to its State in Foreign Countries.* By the CONDUCTOR.

ALL the architecture in Britain worthy of the name, from the revival of the arts to the time of Henry VIII., was Gothic; and all the principal buildings were cathedrals, churches, monasteries, and defensive castles. The seizure of church property by Henry, combined with the Reformation, stopped the progress of monastic buildings, and gave a check to the employment of the Gothic; the florid ornaments of which, being associated in the minds of the people with popery, were carefully avoided, not only by the courtiers, but by all the followers of the reformed church. The security given to private property by the long and peaceful reign of Elizabeth made dwelling-houses be generally substituted for defensive castles; and the new feeling of security, and a wish for comfort, mingling with the ancient prejudices in favour of small windows, thick walls, and carved ornaments, produced the mongrels usually called Elizabethan houses. About the time of Charles II., the Roman, or classical, style was introduced; partly by the emigrant noblesse who had followed Charles in his exile, and some of whom had penetrated into Italy; and partly by the Catholics, who grew into wealth and power during this reign, and who felt a pleasure in creating, even in their buildings, a covert allusion to the grand goal of all their hopes and wishes—Rome. About the end of the last century, Gothic was revived: first in the fantastic building of Lord Orford at Strawberry Hill, and in the designs of Batty Langly; but afterwards, in somewhat better taste, in the repairs made to Windsor Castle, and some new mansions, erected in different parts of the country by Mr. James Wyatt. From that time to the present, Gothic and Grecian architecture, and all the varieties and hybrids which have sprung from them, have been studied as a matter of course by archi-

fects, and have become almost equally prevalent in buildings throughout the country; no one particular style, or manner, appearing to have any very decided advantage in popularity over the others.

It does not fall within the plan of this summary notice to enumerate all the different circumstances which have given impulses to the progress of architecture during the present century; but we may briefly refer to a few of them, which may be included under two heads; viz. those which have taken place in the art itself, or among its professors, and those which are the result of exterior circumstances.

One of the circumstances which has mainly conduced to the improvement of architecture in the present time, is the introduction of Roman Cement, and its employment for covering exteriors, and executing ornaments. Other cements had been previously used, particularly by the architect Adams; but the kind now generally employed was not introduced till about 1804, when it was first brought into notice by Parker. The facility, and consequent cheapness, with which architectural designs could be executed, gave full scope to the fancy of architects; and the villas and street houses of the middling classes have, since the commencement of the last century, begun generally to display proofs of architectural taste, which only a few years previously would have been thought impracticable. The inventions of Coade and Seeley, and of Austin, with regard to artificial stone, have also greatly contributed to this end; especially to the embellishment of villas in vases, fountains, &c. The employment of cast iron in building is a practice which belongs exclusively to the present century; and, though it cannot be considered as having contributed to the improvement of architectural design in buildings (whatever it may have done towards rendering them fire-proof), yet, with regard to bridges, it certainly may be said to have effected a revolution in their construction. The publication of Stewart's *Athens*, and Wilkins's *Magna Græcia*, improved the taste of architects in Grecian architecture, by giving them superior models; while the voluminous, accurate, and excellent works of Britton, and those of some others, afforded examples of a purer taste in Gothic.

The grand characteristic, however, of the present day is co-operation. At the commencement of the present century, very few societies existed for the improvement of the arts, though we had the Society of Arts, and the Royal Academy; but, within the last twenty years, societies have arisen exclusively devoted to the advancement of a single art, or even one single branch of an art; such as agricultural, horticultural, and florists' societies; the Society of Painters in Water Colours, &c. Several societies have been formed, including architects; and

one published a volume of *Essays* in 1806. Several societies for architects were projected about 1830, and one, the Architectural Society, was established (see Vol. II. p. 513.), which appears in a flourishing condition (see p. 581.). None of these societies, however, seem to have exercised any important influence over the profession, till the establishment of the Institute of British Architects, in 1835. The previous societies may reasonably be considered as having given a stimulus to architecture, by the improvement which they must necessarily have occasioned in the young men belonging to them; and the same thing may be stated with reference to the lectures on art given not only at the different institutions in London, but throughout the country. The Institute of British Architects was commenced, and their regulations published, in 1835 (see Vol. II. p. 305.); and the different meetings which this body has since held will be found noticed in this and our preceding volume. The rapidity with which this Society has increased its numbers, and acquired a reputation greater than that of almost any other society of equally short duration, show that such an institution was much wanted; and leave no doubt in our minds that it will prove the greatest stimulus to architecture which this country has ever received. We hope we may add that the publication of our *Architectural Magazine, and Encyclopædia of Cottage, Farm, and Villa Architecture*, have contributed, and will continue to contribute, to the progress of architecture, by diffusing a certain degree of knowledge and taste in it generally.

The exterior causes, or those not produced by architects themselves, which have led to the improvement of architecture, are various; but they may all be referred to the increasing wealth and prosperity of the country at one time, and to the stagnation of improvement at another. The prosperity creates a demand for improved buildings, and for numerous architects; and the stagnation of improvement, by cheapening the price of materials, as well as of architectural skill, paves the way for their more extensive employment; on the obvious principle, that excess of supply of any article in the market has a tendency, by lowering its price, to increase its consumption.

The commercial monopoly of this country during the long war which ended with the peace of 1814, by enriching the seaport towns, led to the formation and improvement of docks, quays, and other buildings connected with them. Liverpool and Glasgow took the lead in this kind of improvement. The rise of rents throughout the country enabled the landed gentry to enlarge their mansions by additions, or to build new ones; and the general prosperity gave rise to the building of many small villas and ornamental cottages.

The enormous prices paid for architectural skill, but more

especially for the erection of buildings of every description, during this period, led to public competition, both for designs of building, and for contracts for executing them. The contractors for government buildings, at the commencement of the war, from their being few in number, obtained high prices, and made immense fortunes; but towards its conclusion, the number of competitors being greater, the prices were reduced so low, that many of them were ruined. The same causes produced the same effects in private architecture and building; and so extended is now the competition, both in giving designs, and in contracting for executing them, that the price may be considered as at its lowest ebb. After the peace of 1814, the attention of government was directed to internal improvement; and architecture gained something, though it cannot be said much, by the law which passed for the building of new churches. The greatest stimulus given to architecture in London, since the great fire of 1666, was the alterations made by the late Mr. Nash; which commenced with the Opera House, and the formation of Regent Street, about 1812; which are now extending in all directions in and around the metropolis; and the spirit of which seems to have been caught more or less by every considerable town throughout the country. We ought not to pass over the influence which the gin palaces have, within the last three or four years, had on the street architecture of the metropolis; not so much in themselves, as in the influence they have had in improving the fronts of other houses, more especially those having shops. Another stimulus to architecture seems to have been given by the progress of knowledge in literature, and in the arts and sciences; indirectly, by improving the taste, and thus creating a desire for improved buildings of every description; and directly, by leading to the erection of literary institutions, museums, academies, schools, &c., which have risen up of late years not only in large towns, but even in small ones, and each of which has given employment to an architect. In particular countries, or districts of country, the operation of comparatively local causes has led to local improvement: for example, the great progress made in agriculture in the south of Scotland has produced a great improvement in every description of farm buildings in that district; and the formation of new lines of road, and the improvement of old lines, has occasioned the erection of a superior description of turnpike-gate houses, inns, bridges, and fences along these roads; and these, on the principles of imitation and emulation, have led to the improved appearance of the cottages, and of all other buildings along the same line of road. This impulse is strikingly exemplified by the dwellings and fences on each side of the Holyhead Road, the whole way from London to the Menai Bridge; and, in Scotland,

it is equally obvious along the new road from Glasgow to Edinburgh. The peace of 1814 also gave an impulse to the progress of architecture; a great superabundance of young architects being produced in consequence of the army, navy, and government offices no longer absorbing the superfluous male population of families of the middling classes not in trade. This has lowered the price of architectural talent and skill very considerably; and, consequently, rendered it available by many persons, who could not have afforded to pay first-rate architects, and who, if there had not been a superabundance of architects in the market, must have employed common builders. The great obstacle to the establishment of a young man in any profession, in this country, has always been the difficulty of procuring patronage; or, as it is called, forming a connexion. This, till the commencement of the present century, could not be done by any other mode than by obtaining the protection of some individual of rank and wealth. Early in the present century, however, a different mode was attempted; viz. that of architects, landscape-gardeners, drawing-masters, &c., publishing books relating to their professions, and serving to show their skill in them: and these served at once to introduce the authors to employment, and to improve in some degree the public taste. The last cause which we shall mention as having given an impulse to British architecture, is the view of the Continental buildings, which the peace afforded an opportunity of inspecting, and which have been, consequently, seen by many thousand individuals.

Having now taken a rapid glance at the causes which have contributed to the improvement of architecture in Britain, up to the time of the establishment of the Institute of British Architects, in 1835, little more remains for us to do, than to notice what has occurred during the past year.

The exhibition of the competition designs for the new Houses of Parliament will at once occur to our readers as the great architectural event of the year 1836. This competition may be considered as having done good to architects, by calling forth their latent talents; and as giving a stimulus to the art, by directing public attention to the talent developed. When we consider the small number of architects that were at all eminent in the year 1800; and that, in 1836, nearly 100 architects sent in designs, almost all respectable in point of composition and execution, for a vast public building, the arrangements required in which they could never before have had occasion to study; the increase of architects and architectural talent seems astonishing. The preparation of these designs, by the kinds of study which the architects preparing them were compelled to enter into, cannot fail to contribute to the improvement of architecture in various ways; independently altogether of what

may be called artistical composition. The attention which the architects were compelled to pay to the principles of warming and ventilation, in order to adapt them to so large a building, will lead, in all probability, to improvements which may be adopted in common dwelling-houses: the necessity of rendering the House of Lords and the House of Commons suitable for hearing, will lead to the improved construction of churches, lecture-rooms, and, above all, courts of justice, theatres, schools; and the directions given by the committee to the architects with reference to fire-proof construction, may, perhaps, give rise to improvements in that respect, which will be applicable to all buildings whatever.

As far as we recollect, no remarkable public or private building in London has been completed during the past year; but King William Street, in the city, has been opened, and a number of chapels, schools, and other public buildings have been finished or commenced. We refer the reader to our Domestic Notices for details.

In the country, the greatest architectural improvement which has taken place for many years is in Birmingham; the magnificent Town Hall erected in which has been described, and illustrated with engravings, in our preceding Volume. A public school, from a very elegant design, in a highly enriched Gothic, by Mr. Barry, is in course of erection; and a new market-place, by Mr. Charles Edge, has been lately finished. In various other towns, churches and markets have been completed, and many workhouses and some schools begun. Very extensive additions and alterations are taking place in the mansions belonging to various country seats in different parts of England; the most extensive of which are by Mr. Barry, Mr. Salvin, and Mr. Hopper. The city of Edinburgh has been undergoing a series of improvements in the streets and public buildings for a number of years; and Glasgow, Dundee, Greenock, and most of the other commercial and seaport towns, are undergoing architectural changes for the better. The most extensive improvements making in private country residences in Scotland, are, we believe, those in Hamilton Palace, by Mr. Hamilton, architect, of Glasgow; and those in Drumlainrig House, the seat of the Duke of Buccleugh in Dumfriesshire, by Mr. Burns of Edinburgh.

The furniture of houses has followed the same general course as their architecture. Up to the time of Elizabeth, it was Gothic; but during her reign those classical and anomalous lines and forms were introduced which constitute the features of the Elizabethan manner. Charles II. introduced the taste of Louis XIV., which prevailed in this country nearly to the time of the publication of the late Mr. Hope's *Designs for Furniture*, in

1807; having been only slightly and partially improved by the publication of Flaxman's *Æschylus*, and other works containing classical designs, from 1793 to 1809. The publication of the Arabesque designs in the remains of Pompeii, and of the vases of Sir William Hamilton, also contributed to the same end; more especially in the hands of furnishers of taste, like the late Mr. George Bullock. Since that period, there has been a great and decided improvement in every thing relating to furniture and furnishing in Britain; and of this improvement, the best feature is, that no one particular style is every where adopted throughout the country (as was formerly the case), to the exclusion of every other style; but Gothic, Grecian, Elizabethan, or Louis XIV. furniture is employed, according to the architecture of the house in which it is to be placed. During the past year, and for two or three years preceding, it has become fashionable to import, for fitting up English mansions, the furniture, chimney-pieces, wainscoting, and carved wooden ornaments of dismantled French châteaux; and particularly to employ them in houses built in the Elizabethan manner: but this taste is on the decline. (See *Report on the Arts*, &c., p. 20.)

On the continent of Europe, much more encouragement appears to be given to architecture by the governments than is the case in Britain; a circumstance which arises partly from the difference between the Continental governments and that of this country, and partly from the very different distribution of the wealth of the Continental countries and that of Britain. On the Continent, almost all great public works are undertaken by the governments; whereas in this country they are very frequently undertaken by public companies. On the Continent, the wealth of the aristocracy is comparatively stationary, and so is the architecture and furniture of their châteaux. In Britain, the wealth of many rich individuals is constantly changing proprietors; and men engaged in commerce or manufactures frequently amass wealth to such an extent as to raise them far above the hereditary aristocracy. Hence, the changes in the dwellings of such men, and men of wealth generally, in this country; and, without change, there can be no improvement. When the Continent shall be penetrated to its inmost recesses by railroads, the commerce which will be the consequence will produce the same results there as in Britain, as far as the difference between a small island and an immense continent will permit: but this cannot happen otherwise than by degrees; and it will be difficult for the private rural architecture of France, Germany, and Spain to rival that of England for a long time to come.

In France, the principal architectural advances appear to have been made in Paris; and in Germany, at Munich and Berlin. For some details respecting the improvements in these cities, we

refer our readers to our Foreign Notices, and to the proceedings of the Institute of British Architects, which will be found in this volume. The architectural object of greatest immediate interest in Paris is the erection of the Obelisk of Luxor in the Place Louis XV. Both in France and in Germany, the great object of discussion, and also of experiment, in the architectural world, at present, is the polychromic, or many-coloured, architecture; on which an article will be found in the present Volume; and one more in detail, in Crelle's *Journal für die Baukunst*, and in the *Transactions of the Institute of British Architects*; part i. vol. i.

The first change which took place in the furniture of France after the days of Louis XIV., was during the consulship, when a severe simplicity was aimed at. Meanwhile, the style of Louis XIV. still prevailed in Germany. When Napoleon became Emperor, in 1810, the style had become prevalent in France, which is depicted in the work entitled *Décorations Intérieures*, &c., by Percier and Fontaine, which was published in 1812, and which is characterised by the Arabesque style of its ornaments. This style of fitting up and furnishing is that which is at present most prevalent in France, Germany, Italy, and, in short, in every part of the Continent.

In Russia, architecture may be considered as confined to a very few large towns; and chiefly to the residence city, Petersburg, and the capital of the empire, Moscow. Previously to the burning down of Moscow, in 1812, it contained a greater number of splendid palaces than any other city in Europe; but, though many of those have been rebuilt, scarcely any of them have been restored to their original splendour. There are few villas or mansions erected by the Russian nobility on their landed estates; their residence in them being commonly limited to the four summer months; during which all the nobles, except those immensely rich, reside in barn-like log-houses; while during the winter they retire to the towns, where their houses are of a more architectural character. There are, doubtless, exceptions, even among the small proprietors, and many among those who are more wealthy, particularly those who have lived much in other countries, but they are few. We have lately seen, however, the designs of one country residence in the Crimea, now erecting for a Russian prince, from the designs of a British architect, and under the superintendence of a British clerk of the works. In Petersburg, a column has been recently erected to the memory of Alexander I.; and a railroad is nearly completed between that city and two adjoining villages, as will be found recorded in its proper place under Foreign Notices. The greatest improvement, connected with architecture, that could be made in European Russia, would be the construction of a

railroad between Petersburg and Odessa; with branch railroads at regular distances, to the right and left, continued to the Ural Mountains on one side of the main line, and to the boundaries of Hungary and Poland on the other. The whole country being perfectly flat, and iron, timber, and labour being abundant and very cheap, all this could be effected there in a shorter time, and at less expense, than in any other country in the world; and it would render Russia the granary of the north and south of Europe, of the west of Asia, and of the north of Africa.

In Sweden, we are not aware of any remarkable architectural improvement going forward, though it was one of the first countries in the north that set the example of forming excellent roads, canals, and harbours: but some very interesting extracts respecting the domestic architecture of Norway, from Laing's *Journal of a Residence, &c.*, in that country, will be found in a future page.

The principal improvements going forward in Spain and Italy consist in intersecting the least improved parts of the country with roads, and the establishment of public conveyances; the governments of these countries acting on the judicious principle, that free communication is the foundation of all other improvements.

In North America, nine tenths of the buildings, both public and private, are of wood; but in the principal towns, edifices of brick and stone, or of wood covered with stucco, imported from England, begin to appear. Many tons of the kind of stone that is burned in order to form Roman cement in England are now annually shipped to New York and Philadelphia, for the same purpose; it having been found that the cement, when imported ready made, lost, during the voyage, a considerable portion of its property of setting. A great many chimney-pots, vases, and other ornaments of stucco, or artificial stone, for placing on cottages and other private dwellings, are also annually shipped for American ports. Engravings of a splendid new custom-house erected in New York are given in our preceding Volume; and various buildings of stone and brick, of improved architectural design, are said, in the *Journal of the Franklin Institute*, to be going forward in Boston and Philadelphia. The great fire which happened in New York during the past year will, doubtless, like the great fire of London in a former age, contribute to its improvement. It is an instructive circumstance respecting this fire, that those walls, adjoining the wooden houses which were burnt down, that were of stone, were much more injured than those which were of brick. The stone, being calcareous, was calcined by the heat; while the bricks, being argillaceous, with only a small portion of sand, were only slightly vitrified in places where the walls were exposed to a very intense heat.

ART. II. *Report from the Select Committee on Arts and their Connexion with Manufactures; with the Minutes of Evidence, Appendix, and Index. Ordered by the House of Commons to be printed, August 16. 1836. 1 vol. folio. Plates. London, October, 1836. Printed by Luke Hansard and Sons. Price 6s. 3d.*

THIS is a most interesting volume, as embodying the opinions of some of the first amateurs in the country in matters of art; and also of some of the first artists and literary men, including several architects and several engineers. We shall probably have much to extract from it; but we shall give, in the first place, what may be considered as the essence of the whole, viz. the Report of the Select Committee, dated Aug. 1836.

THE REPORT of the **SELECT COMMITTEE** appointed to enquire into the best means of extending a knowledge of the **ARTS** and of the **PRINCIPLES** of **DESIGN** among the people (especially the manufacturing population) of the country; also to enquire into the constitution, management, and effects of institutions connected with the **Arts**; and to whom several **Returns** to the House of Commons, relating to the Cultivation of the **Arts** in Foreign Countries, were referred, and who were empowered to report the **MINUTES** of the **EVIDENCE** taken before them to the House: — Have examined the matters referred to them, and have agreed to the following **REPORT**.

The Committee have pursued (amid frequent interruptions, caused by the numerous Private Bills introduced in the present session) the enquiry left unfinished by them in the last session of Parliament.

In taking a general view of the subject before them, the Committee advert with regret to the inference they are obliged to draw from the testimony they have received; that, from the highest branches of poetical design down to the lowest connexion between design and manufactures, the arts have received little encouragement in this country. The want of instruction in design among our industrious population; the absence of public and freely open galleries, containing approved specimens of art; the fact that only recently a national gallery has even been commenced among us; have all combined strongly to impress this conviction on the minds of the members of the Committee. In many despotic countries, far more developement has been given to genius, and greater encouragement to industry, by a more liberal diffusion of the enlightening influence of the arts. Yet, to us, a peculiarly manufacturing nation, the connexion between art and manufactures is most important: and for this merely economical reason (were there no higher motive), it equally imports us to encourage art in its loftier attributes; since it is admitted that the cultivation of the more exalted branches of design tends to advance the humblest pursuits of industry, while the connexion of art with manufacture has often developed the genius of the greatest masters in design.

The want of instruction experienced by our workmen in the arts is strongly adverted to by many witnesses. This deficiency is said to be particularly manifest in that branch of our industry which is commonly called the fancy trade; more especially in the silk trade; and most of all, probably, in the riband manufacture. Mr. Martin, the celebrated painter, complains of the want of correct design in the China trade; Mr. Papworth, an eminent architect, of its absence in the interior decorative architecture of our houses, and in furniture. Hence the adoption of the designs of the era of Louis XV. (commonly dignified with the name of Louis XIV.); a style inferior in taste, and easy of execution. To a similar want of enlightened information in art, Mr. Cockerell attributes the prevailing fashion for what is called Elizabethan ar-

chitecture; a style which (whatever may be the occasional excellencies of its execution) is undoubtedly of spurious origin.

This scanty supply of instruction is the more to be lamented, because it appears that there exists among the enterprising and laborious classes of our country an earnest desire for information in the arts. To this fact, Mr. Howell, one of the factory inspectors, has borne ample testimony; Mr. Morrison, a member of the House of Commons, has given evidence to the same effect. The ardour for information is apparent in Birmingham, Sheffield, and in London; and the manufacturing workmen in the neighbourhood of Coventry have (to their great honour) specifically petitioned the House of Commons for instruction in design.

It has too frequently, if not uniformly, occurred, that the witnesses consulted by the Committee have felt themselves compelled to draw a comparison more favourable (in the matter of design) to our foreign rivals, and especially to the French, than could have been desired, either by the Committee or the witnesses.

The Committee were anxious to investigate the pervading cause which seemed to justify this conclusion. It appears that the great advantage which foreign manufacturing artists possess over those of Great Britain consists in the greater extension of art throughout the mass of society abroad. Art is comparatively dear in England; in France, it is cheap, because it is generally diffused. In England, a wealthy manufacturer has no difficulty in procuring superior designs. Our affluent silversmiths have called to their aid the genius of Flaxman and of Stothard. But the manufacturer of cheap plate and inferior jewellery cannot procure designs equal to those of France, without incurring an expense disproportioned to the value of the article on which his labour is employed.

According to the evidence of M. Guillothe, a maker of Jacquard looms (a gentleman who does the fullest justice to the English manufacturers), a French capitalist employs three or four artists, where, in England, one artist would supply eight or ten manufacturers. This is exemplified in the process called by the French the "*mise en carte*," or the practical transfer of the pattern to the fabric into which it is to be wrought. It appears that, in England, the designer of the pattern and the person who applies it to the manufacture are distinct persons. In France, the workman is himself the artist.

The French have long been celebrated for their attention to design in manufactures. Their zeal in this pursuit is no where more manifest than in their recent prosecution of the shawl trade,—in the introduction both of the material and pattern of the Cashmere shawl by M. Ternaux, and in the later investigations of M. Couder. M. Couder has established a school for shawl designs at Paris: he has succeeded in tracing the original designs on the shawls of Cashmere through all the imperfections of the native manufacture, and supplied his country with the genuine pattern.

Much importance has justly been attributed to the schools of design so generally diffused through France. These schools (in number about 80) are superintended by the government. The free, open, and popular system of instruction (prevalent in France since the days of Colbert), and the extreme accessibility of their museums, libraries, and exhibitions, have greatly tended to the diffusion of a love of art, as well as of literature, among the poorer classes of the French. The testimony of Dr. Bowring, M.P., on this subject, will be consulted with interest and advantage.

According to the evidence of a distinguished foreigner, Dr. Waagen, the intelligent administration of Prussia has felt the necessity of paying great attention to the instruction of the Prussian manufacturers in art. The description of the *Gewerb-Institut*, at Berlin, which was founded with this view, will be read with interest in the evidence of Dr. Waagen. It appears that a constant correspondence is maintained between this institution and the more distant local governments and local manufacturers. In Bavaria (now the classic country of the arts) there are thirty-three schools of design. Outline-drawing,

to a considerable extent, forms an element in the system of national education.

The Committee intended to have laid before the House returns received through the medium of the Foreign-office, explanatory of the different schools and institutions connected with the arts in foreign countries. The non-arrival of the returns from France and from Prussia has caused the production of these documents to be postponed to a future session.

In our own country, manufacturing artists have been greatly indebted to such institutions as the Board of Trustees in Edinburgh, and the Royal Society in Dublin (the latter of which has this year come under the consideration of another committee of the House of Commons). In England, the rising Institute of British Architects promises great advantage to our manufacturers; and the more matured mechanics' institutions have disseminated much valuable instruction in the arts. The Reports of the Mechanics' Institutes of Glasgow, Manchester, and Coventry indicate, in the present year, the awakened attention of the inhabitants of these great towns to the importance of education in design.

His Majesty's government has this year, for the first time, proposed a vote in the estimates for the establishment of a normal school of design.

It appears to the Committee that, in the formation of such an institution, not mere theoretical instruction only, but the direct practical application of the arts to manufactures, ought to be deemed an essential element. In this respect, local schools, where the arts reside, as it were, with the manufacture to which they are devoted, appear to possess many practical advantages. In such situations, it is probable that the arts will eventually strike root and vegetate with vigour. But, if a more central system be adopted, the inventive power of the artist ought equally to be brought to bear on the special manufacture which he is destined hereafter to pursue. This principle is judiciously adopted in the *Gewerb* institution at Berlin; in which, after one year of general instruction in art, the pupil selects a branch of manufacture as his trade, and passes two years in the practical application of art to the peculiar manufacture which he has chosen. Unless the arts and manufactures be practically combined, the unsuccessful aspirants after the higher branches of the arts will be infinitely multiplied, and the deficiency of manufacturing artists will not be supplied.

Perhaps the government would most judiciously interpose, not only by creating a normal school, but by applying to local institutions the species of assistance now extended to the building of school-houses. It is worthy of consideration whether, if satisfactory evidence were given that the local residents or municipalities would supply a certain portion of the expense, contributions, in aid only, might not be judiciously supplied by government. But the interposition of the government should not extend to interference: it should aim at the development and extension of art; but it should neither control its action, nor force its cultivation.

The same system might, probably, be beneficially extended to the formation of open public galleries or museums of art in the various towns willing to undertake a certain share in the foundation, and to continue the maintenance of such establishments. In nothing have foreign countries possessed a greater advantage over Great Britain than in their numerous public galleries devoted to the arts, and open gratuitously to the people. The larger towns of France are generally adorned by such institutions. In this country we can scarcely boast of any. Our exhibitions (where they exist) are usually periodical. A fee is demanded for admission, and modern works only are exhibited. From such exhibitions the poor are necessarily excluded. Even those who can afford to pay, seldom enjoy the advantage of contemplating perfect specimens of beauty, or of imbibing the pure principles of art. If the recommendation of the Committee were adopted — that the opening of public galleries for the people should, as much as possible, be encouraged — casts of the best specimens of sculpture might be advantageously transmitted from the metropolis to

the different towns. Casts are cheaply supplied in Paris, under the superintendence of an artist; and a tariff, indicating their several prices, is issued for the benefit of the public. This example is worthy of imitation. But, besides casts and paintings, copies of the Arabesques of Raphael, the designs at Pompeii, specimens from the era of the revival of arts, every thing, in short, which exhibits in combination the efforts of the artist and the workman, should be sought for in the formation of such institutions. They should also contain the most approved modern specimens, foreign as well as domestic, which our extensive commerce would readily convey to us from the most distant quarters of the globe.

It appears that, among our workmen, a great desire exists for such public exhibitions. Wherever it be possible, they should be accessible after working hours, and admission should be gratuitous and general. A small obstruction is frequently a virtual prohibition. The vexatious fees exacted at Westminster Abbey, St. Paul's, and other public buildings, are discreditable to the nation. In the Abbey at Westminster, not only is a fee demanded at the door, but supplementary fees are extorted in different portions of the building.

An intelligent witness, Mr. Nasmyth, suggests the great advantages which manufacturers would derive from themselves encouraging a knowledge and a love of art among their workmen. The exhibition of works of proportion and of beauty in rooms connected with factories would have a beneficial effect on minds already familiar with geometrical proportions. Scientific improvements in machinery, and economy in the construction of it, are both intimately connected with perfection of form. The geometrical forms of the works of antiquity (especially in their relation to the ellipse) are referred to by Mr. Nasmyth, and more fully developed by Mr. Reinagle. Mr. Cooper has shown that the application of art to a material not only encourages, but sometimes creates, a manufacture. Were the arts more extensively diffused among our population, many articles, such as marble, terra cotta, wood, and ivory (a material to which much art is applied in France), would give additional employment to the people.

It has been generally admitted, both by artists and by manufacturers, that access to botanical gardens would have an excellent effect on our industrious population. The French study more closely than we do the living flower; and their imitations of plants are generally acknowledged to be more correct than ours. Mr. Hay, an intelligent practical witness from Edinburgh, has dwelt on the importance of the study of the natural flower, even in its simplest form.

Among the advantages possessed by the manufacturing artists of foreign countries, the attention of your Committee has been directed to the books on art published by the governments for the instruction of their workmen. Among these, the works issued by Mr. Beuth, director of the Gewerb-Institut at Berlin, particularly deserve to be mentioned.* These works, printed at the expense of the Prussian government, with copperplate engravings, make known to the manufacturing artist the most beautiful models of antiquity and the era of the *Renaissance*, as well as Oriental and Moresque designs. Architectural illustrations, both for the exterior and interior of buildings, vases, tripods, pateræ, patterns for various species of manufacture, form one of these volumes. The other is devoted to plans and illustrations of the construction of the public works of Prussia.

* Vorbilder für Fabrikanten und Handwerker. By Professor Beuth, Berlin.

Bau-ausführungen des Preussischen Staats. By the same.

To which may be added, —

Ornamente aller classischen Kunst-epochen, nach den originalen. An excellent work, by Professor Zahn, Berlin.

Several other German works on the same subject are mentioned in the evidence of Mr. Morant, Part II.

The chief excellence of these works appears to consist in their general correctness and classical purity of taste. It is gratifying to observe, that British capital and intelligence, unaided by the government, have been turned in the same direction. Cheap publications upon art are studied with interest by our workmen. The *Mechanics' Magazine* has, in this point of view, as well as in its more scientific character, conferred lasting advantages on the manufactures of the country. The immensely extended publication of specimens of art by means of the steam-printing machine is justly commemorated in the evidence of Mr. Cowper. The *Penny* and *Saturday Magazines*, the *Magasin Pittoresque*, the *Magasin Universel*, and other cheap works issued in France and Germany, are mainly indebted for their success to this great instrument of knowledge. Nothing is more cheering than to find public instruction, and consequently public happiness, thus extending with the increase of national capital, and conveying intelligence and civilisation in so cheap a form to the remotest cottage in the kingdom. Such instruments may be said to form the paper circulation of knowledge; and, while the friends of education lament that the people are yet most insufficiently provided with places of instruction, they are somewhat consoled by the reflection that these works convey instruction to the very dwellings of the people.

But, though cheap publications are thus circulated by individual enterprise, there are works, such as those issued by the government of Prussia, which probably require too great labour of design, and are too expensive of execution, to be profitably undertaken by individuals. It is stated, on the high authority of Baron Von Klenze, that the influence of Professor Beuth's publications is already perceptible in the shops and dwelling-houses at Berlin. Encouraged by the success of this experiment, the Bavarian government is about to issue similar, but cheaper, works, for the benefit of the workmen of Bavaria.

It appears to the Committee most desirable, with a view to extend a love, a knowledge of art among the people, that the principles of design should form a portion of any permanent system of national education. Such elementary instruction should be based on an extension of the knowledge of form, by the adoption of a bold style of geometrical and outline-drawing, such as is practised in the national schools of Bavaria. The Committee further would suggest that, if the proper machinery for accomplishing such an object were supplied, the progress of the people in the arts should be reported annually to Parliament. This part of the subject, however, is involved in the much greater question of a responsible minister of education; which the limits imposed on the Committee prevent them from doing more than alluding to.

It is with regret that your Committee notice the neglect of any general instruction, even in the history of art, at our universities and public schools; an omission noticed long ago by Mr. Burke, and obvious to every reflecting mind.

The Committee turn to another branch of the subject connected with arts and manufactures. The difficult and delicate question of copyright has already engaged the attention of the House; and numerous complaints of want of protection for their designs have been laid before the Committee by artists and manufacturers. Mr. Smith, an eminent manufacturer of Sheffield, states that the piracy of his designs will compel him altogether to abandon designing as connected with his trade. A similar, or corroborative, statement is made by architectural sculptors, modellers, manufacturing artists, and artists generally. Mr. Martin has been seriously injured by the piracy of his works; and Mr. Papworth attributes to the want of protection for inventions the absence of original matter in tablets, vases, and foliages; of which, in England, we possess few specimens, and perhaps none worthy of observation. It is well known that a short period of copyright is extended to printed cotton patterns. A doubtful protection has also been afforded to the arts by the statutes 38 Geo. III. c. 71., and 54 Geo. III. c. 56. The copyright given by these

statutes extends to metallic figures of men and animals, to figures combined of the two, and to what is somewhat loosely styled "matter of invention in sculpture." Metallic foliages, Arabesques, vases, candelabra, and similar works, are unprotected by them. Whatever be the legal latitude of these acts, the expensiveness of a remedy through the courts of law or equity is a virtual bar to invention, and almost affords impunity to piracy in art.

The most obvious principle of any measure enacted for the protection of invention appears to be the constitution of a cheap and accessible tribunal. The French have long possessed a prompt and economical court of judgment for cases of this kind. The constitution of the *Conseil des Prud'hommes*, prevalent in the manufacturing districts of France, is a subject of interesting developement in the evidence of Dr. Bowring. These local tribunals form a kind of jury or board of arbitration, composed of master-manufacturers and workmen, empowered to decide on priority of invention in design, as well as many other subjects connected with manufactures. It has, however, occurred to the Committee that, where a dispute arises concerning originality of invention between designers residing at a distance from each other, local tribunals would not readily afford a final adjudication.

In addition to cheapness, the greatest promptitude of decision is another obvious element in the constitution of such a tribunal. For this and for other reasons, a system of registration appears to be indispensable.

Another element in the consideration of this subject is the varying duration of protection to be extended to different inventions in manufactures. The varying periods of protection form a question of minute and exact detail, fit for separate investigation, and dependent on evidence too specific to be comprehended in the more general enquiry undertaken by the Committee.

The Committee consider the elaboration of any comprehensive measure for the protection of designs in manufactures to be well worthy of the serious attention of the government.

The arts, both generally and in so far as they are connected with manufactures, have shared the common suffering under the baneful influence of fiscal duties. The excise laws, in their restrictions on the manufacture and the form of bricks, have obstructed the exercise of art in that material. The window duty acts injuriously on the proportion and beauty of our buildings. The paper duty has been extensively detrimental in its effects on periodical publications on the arts, on the use of drawing-paper, on the employment of cards in the Jacquard loom, and in its oppressive application to the whole trade of paper-staining. The glass duties have fettered the arts in their endeavours to restore painting on glass, in which (contrary to common belief) we are able to surpass the artists of former times. The same duties have restricted the adoption of engravings as ornaments in dwelling-houses. The lower cost of glass in France has encouraged a much more extended use of engravings in private residences.

In reference to the diffusion of a knowledge of the arts, your Committee have already adverted incidentally to exhibitions. Among exhibitions connected with the encouragement of art, their attention has been called to the institutions established in Germany under the name of *Kunst-Vereine*, and now becoming prevalent in this country. These associations, for the purchase of pictures to be distributed by lot, form one of the many instances, in the present age, of the advantages of combination. The smallness of the contribution required brings together a large mass of subscribers; many of whom, without such a system of association, would never have been patrons of the arts. Messrs. Waagen and Von Klenze highly estimate the advantages conferred on the arts by such associations, which appear to have been introduced into Prussia by M. Von Humboldt.

From the subject of exhibitions, the Committee have naturally been led to enquire into the constitution and management of those institutions which have prevailed in Europe for the last two hundred years under the name of academies. Academies appear to have been originally designed to prevent or

to retard the supposed decline of elevated art. Political economists have denied the advantages of such institutions; and artists themselves, of later years, have more than doubted them. It appears, on the evidence of some of the witnesses, that M. H. Vernet, the celebrated Director of the French Academy at Rome, has recommended the suppression of that establishment. It is maintained by Dr. Waagen, that what is called the academic system gives an artificial elevation to mediocrity; and that the restriction of academic rules prevents the artist from catching the feeling and spirit of the great master whom he studies; like the regulations of those literary institutions of former times, which set more value on scanning the metres of the ancients than on transfusing into the mind the thoughts and feelings of the poet. Many of the witnesses concur with Dr. Waagen in the opinion that academies ought properly to be schools only; wherein such instruction may be given as is not attainable in the *studio* of a private master. When academies go beyond this, their proper province, they degenerate into mannerism, and fetter genius; and, when they assume too exclusive and oligarchical a character, they damp the moral independence of the artist, and narrow the proper basis of all intellectual excellence — mental freedom.

It seems probable that the principle of free competition in art (as in commerce) will ultimately triumph over all artificial institutions. Governments may, at some future period, content themselves with holding out prizes or commissions to the different, but coequal, societies of artists, and refuse the dangerous gift of preeminence to any. It is more than probable that our Royal Academy is indebted for the distinguished names which adorn its annals to the necessity of competing as a private society with other institutions, rather than to the extraneous distinctions and privileges with which it is decorated, and, perhaps, encumbered. As it stands, it is not a public national institution like the French Academy, since it lives by exhibition, and takes money at the door. Yet it possesses many of the privileges of a public body, without bearing the direct burthen of public responsibility.

The artists examined by the Committee frequently concur in admitting the eminence of the present and of former members of the Royal Academy; but they complain of the exclusive nature of its rules, of the limitation of its numbers, and of the principle of self-election which pervades it. Among its exclusive rules has been named one which prohibits the members of the Academy from belonging to any other institution of artists in London; and another, which restricts a candidate for academic honours from exhibiting beyond the walls of the Academy. It is true that the inexpediency of the former of these regulations is acknowledged on the part of the Academy; but it still exists, and has recently been carried into execution. The private and irresponsible nature of the proceedings of the Academy; the privilege enjoyed by the Academicians, of exclusively consorting with the patrons of art at the annual dinner; their prerogative of retouching their own works previous to exhibition (a power denied to the other artists who exhibit); and the monopoly of the best places by the pictures of the Academicians, have been adverted to by various witnesses. Of the privileges above named, some have been denied to be exclusive; others have been claimed by the Academy as essential to the nature of such an institution.

It is certainly to be lamented that artists so distinguished as Mr. Martin and Mr. Haydon should complain of the treatment of their works within the walls of the Academy; and particularly that Mr. Martin should declare that his paintings have found that encouragement in the foreign exhibitions of France and Belgium which they have been denied at home.

Some irregularities have been noticed in the delivery of lectures at the Academy. The neglect of architecture has been complained of by several artists *extra muros*; and the inadequacy of the instruction given in that important branch of art is admitted by the President himself.

The exclusion of engravers from the highest rank in the Academy has often called forth the animadversions of foreign artists. In the French Academy,

engravers are admitted into the highest class of members. So are they in Milan, Venice, Florence, and in Rome. In England, their rise is limited to the class of associates. This mark of depreciation drove such eminent men as Woollett, Strange, and Sharpe far from the Academy. Such a distinction seems the more extraordinary, because British engraving has attained a high degree of excellence. Foreigners send pupils hither for education; and the works of British engravers are diffused and admired throughout the Continent.

The remarks of foreign critics have frequently been elicited by the unusual predominance of portraits over other works of art in our annual academic exhibitions. It appears (from the returns appended to the report) that fully half of the paintings annually exhibited have been portraits, which often inconsistently obtrude themselves before ideal and historical compositions. In the arrangement of a national exhibition, a more appropriate classification ought surely to be adopted.

The plan annexed to the evidence of Mr. Wilkins will explain that fully one half of the new National Gallery has been given up to the Royal Academy. Against this apportionment of the national building a large number of artists have remonstrated; and two bodies of painters have petitioned the House of Commons on the subject. They declare their inability to compete with an institution so favoured at the public expense. It is true that the Academy may be compelled to quit the National Gallery whenever public convenience requires their removal; but the great body of non-academic artists contend that a society which possesses not only this but many other public advantages ought to be responsible to those who contribute to their exhibitions, and whose interests they are supposed to represent. A strong feeling pervades the artists generally on this subject. They are uneasy under the ambiguous, half-public, half-private character of the Academy; and they suggest that it should either stand in the simple position of a private institution, or, if it really represents the artists of Great Britain, that it should be responsible to, and eligible by, them.

Few circumstances can more fully exhibit the hitherto exclusive nature of our institutions, than the fact that we have only just begun to form a National Gallery. The new building, now nearly completed, has been thrown back to open the façade of St. Martin's to Pall Mall; an alteration in his original design which the architect much deplora. It is to be lamented that the whole edifice is not fire-proof. The portion allotted to the Royal Academy is not so. As, according to the plan, the officers and servants of the Academy reside on the premises, there will be fires in the academic portion of the building; a circumstance which must more or less endanger the adjacent national collection. In the construction of the new picture gallery at Munich (described in the evidence of Baron Von Klenze), the removal of all danger from fire seems to have been particularly attended to.

The description of the magnificent galleries of sculpture and painting at Munich given by Baron Von Klenze, at the end of the evidence, will be read with interest and instruction.

The subject of a catalogue, or description of the paintings, is an important element in a national collection. Besides a *catalogue raisonné*, M. Waagen, in the Berlin Gallery, and Baron Von Klenze, in the Gallery at Munich, have placed in each compartment of the gallery a descriptive map of the walls, by reference to which the spectator derives some brief information respecting the several pictures and their painters. It appears to the Committee that the most ready and compendious information would be given to the public by fixing its name over every separate school, and under every picture the name, with the time of the birth and death, of the painter; the name, also, of the master, or the most celebrated pupil of the artist, might, in certain cases, be added. This ready, though limited, information is important to those whose time is much absorbed by mental or bodily labour. For their sakes, also, it is essential that the gallery be opened in summer, after the usual hours of

labour. It is far better for the nation to pay a few additional attendants in the rooms, than to close the doors on the laborious classes; to whose recreation and refinement a national collection ought to be principally devoted.

It appears to your Committee that some portion of the gallery should be dedicated to the perpetuation and extension of the British School of Art. Pictures by living British artists of acknowledged merit might, after they have stood the test of time and criticism, be purchased for the national collection; especially such paintings as are more adapted, by their style and subject, to a gallery than a cabinet. A room might also be devoted to such engravings as have undergone a similar probation of public criticism. This encouragement appears to be due to the higher branches of engraving.

It would be a great public benefit if the celebrated cartoons from Hampton Court could be deposited in the National Gallery. That they could be preserved there with safety is the opinion of several eminent artists.

Your Committee observe with regret that the great picture of *Sebastian del Piombo* has been exposed to the hazard (from the incursions of insects) detailed in the evidence.

With respect to the future extension of the national collection, it has been suggested that individuals might be encouraged to bequeath to it money, as well as paintings, by inscribing over the works purchased with their bequests the names of the donors.

It has been recommended by more than one experienced witness that the pictures particularly sought for in our national collection should be those of the era of Raphael, or of the times just antecedent to it, such works being of a purer and more elevated style than the eminent works of the Caracci. Paintings of the Raphael era form the best nucleus of a gallery: they have been sought for, on this account, as the basis of the new National Gallery at Berlin.

The capability of the persons appointed to make purchases for the National Gallery is a very important question. It would seem that the majority of trustees ordinarily selected for such purposes in this country are chosen rather on account of their elevated rank and their possession of pictures than for any peculiar professional ability. A private collector may be an excellent judge of cabinet paintings, but he may not have the comprehensive knowledge required in the choice of a national collection. In the committees appointed to purchase paintings for the National Galleries of France and Prussia there is a greater admixture of artists and of *experts*, or persons who have devoted themselves to the study of the value of pictures. A similar admission of practical and professional critics is, in the opinion of the Committee, desirable in this country.

The composition of our commissions for deciding on plans for public works has also been, with great apparent justice, complained of. In France, the tribunal which decides between competing artists is less limited and more professional. The opinion of the public is also there called in aid of the tribunal. It appears from the evidence of Mr. Cockerell that, on occasion of a recent *concours* for a public commission in Paris, the plans of the different artists were subjected to general public criticism for eight days; after which a tribunal, consisting of artists in general, as well as of those belonging to the Institute, assisted by persons professionally acquainted with the subject of the work, pronounced a final opinion on the merits of the different designs.

It has already been submitted by the Committee that an occasional outlay of public money on British works of art of acknowledged excellence, and in the highest style and purest taste, would be a national advantage. It has also been suggested that, in the completion of great public buildings, the arts of sculpture and painting might be called in for the embellishment of architecture, to the advancement of the arts and the refinement of the people. The habitual contemplation of noble works in fresco and in sculpture is worthy of the intelligence of a great and civilised nation.

It will give your Committee the sincerest gratification if the result of their

enquiry (in which they have been liberally assisted by the artists of this country) tend in any degree to raise the character of a profession which is said to stand much higher among foreign nations than in our own; to infuse, even remotely, into an industrious and enterprising people a love of art, and to teach them to respect and venerate the name of "Artist." — August, 1836. (*Report, &c.*, p. iii. to xi.)

ART. III. *On the Fitting up of Interiors.* Translated from the French of M. QUATREMÈRE DE QUINCY. By P.

THE phrase "fitting up the interior of a house" implies the placing in it of all those things which are requisite to render the dwelling fit for the inhabitants of a civilised country; the nature and quantity of these things varying, of course, with the means, taste, and habits of the individuals for whose use they are designed. According to the above definition, the term *Fitting up* will be found to include the movable articles of furniture; but, as we only intend to consider the phrase with reference to architectural decoration, we shall confine our ideas on this head to the different modes of embellishing the inner walls of palaces, houses, &c., by tapestry or hangings. Luxury, in this species of furniture, was carried to the highest pitch amongst the ancients, especially in the Eastern nations. The Babylonians, in the interior decoration of their apartments, employed the most elegant furniture. Their luxury, in this respect, was most commonly displayed in the tapestry and coverings with which the seats and beds were ornamented. Pliny, speaking of a carpet which was suited to cover the couches upon which the ancients reclined when at table, mentions that those manufactured at Babylon cost 8000 sesterces. We may judge by this sum (which is nearly equivalent to 65,000*l.*) of the magnificence of this kind of furniture. The *Bible*, also, tells of the vases of brass, ivory, and marble, with which the Babylonian apartments were decorated; and it appears that sometimes these vases were enriched with precious stones.

We are inclined to believe, from the taste still prevailing in the East, that the ancient Asiatics hung the walls of their apartments with stuffs. It is related by Pliny, that Attalus, King of Pergamus, having left the Roman people heirs to his superb furniture, there were found in the collection, among other things, some most beautiful carpets and tapestry, embroidered and embossed with gold. It appears, however, that the manufactories which supplied these costly and precious articles were given up and abandoned, before the decline of the arts in Greece and Italy.

In the two last-mentioned countries, we do not find any remains of a like use of this kind of furniture. The ancient

paintings or bas-reliefs that have descended to us give us no precise indication of it: all the tapestry or hangings that appear in them seem to have been nailed to the walls, in a loose and flowing manner, not adhering closely to the surface. Curtains and festooned draperies were generally employed for alcoves, and round the couches and eating-tables.

It would seem, however, from the numerous fragments of Roman houses and palaces that are still visible, that paintings and sculptures were for a long while the chief decorations of their interiors. This kind of ornament, of all others the most beautiful, was soon succeeded, at Rome, by fine plasterings and marble casings on the walls; a mode of decoration which, according to Pliny, became, at length, a mania with the great. In several passages of this author and philosopher, we find him complaining of the injury done to painting by this popular fancy; and he reproaches his countrymen with their want of taste, as the general result of a degeneracy of manners:—"Quos ad usus quasve ad voluptates alias, nisi ut inter maculas lapidem jaceant."

The Gauls and the Franks had for a long time no idea of carpets and tapestry; but it is well known that they covered their walls and their floors with mats, woven of long straw or rushes. Mats, therefore, with them, constituted their first furniture of this kind. Luxury being introduced by degrees, they began to dye the straw and rushes employed in manufacturing their mats; and these were afterwards wrought into compartments, with varied designs. The most beautiful mats were, at first, brought from the Levant; but, afterwards, they were imitated in France. The finest of these imitations were made at Pontoise, and soon became an important article of commerce. Mats are now no longer used for the decoration of apartments in France, or in any of the French provinces; but they are still the fashion all over Holland, both of home manufacture, and those brought from the Levant. In France, silken or woollen tapestries have generally succeeded matting as a covering for the walls; and they constitute the chief ornament of the interior of apartments, and, consequently, the chief beauty of the fittings up. Cold countries, which require tapestry or hangings to absorb the dampness of the walls, have totally excluded painting and the other arts of design from the interiors of their dwelling-houses; for these could contribute but little to the decoration of apartments in which they would be exposed to the effects of the weather. Therefore this department is almost become foreign to architecture, and generally comes under the jurisdiction of the upholsterer.

ART. IV. *Candidus's Note-Book.*

Fasciculus II.

"Sicut meus est mos,
Nescio quid meditans nugarum; et totus in illis."

I. I WAS once recommending to a young friend that he should make himself so far acquainted with architecture as to be able to recognise at once, and understand, the forms he beheld; but he cut me short, by protesting that he could draw any building correctly enough by his eye; consequently, that he might spare himself the trouble my advice would impose upon him, more especially, as he had taken up the notion, that architectural drawing is no better than a merely mechanical process of drawing lines with a ruler; an idea common to many others as well as to him. Pressing advice upon a friend is, generally, as useless an office as it is an ungracious one; and, as I could only recommend, not enforce compliance by authority, I left him to pursue his own course, well aware, at the same time, that either he would find out his error, or that, if he really could do what he fancied was in his power, he must be extraordinarily clever indeed. Since then he has acknowledged that he was mistaken, and expressed his regret for not having followed my counsel as to studying both architecture and perspective. To this confession I expected it would come at last, being fully assured that, let his general talent be what it may, no one can convey to another the true character of that with which he is not intimately acquainted himself, whether his knowledge of it be the result of long and habitual attention to it, or of methodised study. Undoubtedly, a man may achieve much by observation alone, and such rules as he is enabled to gather from it and lay down for himself; neither ought close observation, accompanied with reflection, to be neglected, since it is by them that an artist makes a way for himself beyond that point where rules stop short. This, however, does not render it the less desirable to avail ourselves of system and rule, as guides and assistants at our first starting. There have been persons who have been able to write, not only correctly, but with great elegance and purity of style, although they have known scarcely any thing of grammar as an art; while others there have been, who, although perfectly well acquainted with it, have hardly been able to turn a single period agreeably, but have been uniformly correct, and uniformly awkward. No one, indeed, expects style from a schoolmaster, or finished elegance of carriage from a dancing-master; nevertheless, it is as well to know what they can teach us.

Even supposing that a person wholly ignorant of architecture should be able to draw buildings with sufficient correctness by the eye alone; it can hardly happen but that, for want of knowing them to be such, he would either generalise, or hardly

notice, those slighter traits and peculiarities of detail, for which the object he professes to represent may be chiefly remarkable. To be sure, it requires a sort of positive genius for blundering to mistake the columns of the India House for Corinthian ones, and represent them as such; or to show eight windows in a front, instead of nine; placing a pier over the door instead of an aperture; or to make the blank windows at the Bank of England as wide at top as at bottom: yet all these blunders, and others, have I seen committed, and given to the world in engravings; some of them, too, by those from whom I should have least of all expected them. Were only mistakes of this sort committed, we might endure them, as being amusing from their very extravagance, since they are hardly one remove from that of a painter who should make a leg growing out of a shoulder, or terminating in a wrist and hand: and even Rembrandt has given a portrait of himself with two right hands. I might draw up a tolerably long catalogue of *bêtises* committed by those who undertake to meddle with architectural drawing, without understanding the objects themselves: as a specimen, I will merely note here a print after a drawing by Bartlett, where the architrave of a Corinthian entablature projects beyond the columns as much as the angles of the abacus of the capitals! But, for glorious defiance of the laws of vision and perspective, commend me to the lithograph views which illustrate the description of the house and museum of Sir John Soane, where we behold what are intended to represent horizontal ceilings, but which are made to appear almost at an angle of forty-five degrees to the walls; and where the artist, whoever he is, has attempted to convince us that it is possible to see two opposite planes sloping from the picture, as plainly as if they inclined towards it. Such a prodigy has actually been achieved in the view of the Shakspeare recess; the narrower end of which is supposed to be towards the spectator; notwithstanding which, a person would fancy himself looking at three sides of an octagon or hexagon; that on either hand of the one facing him being turned *towards*, and not *from*, the eye. If told of it, perhaps the artist would say, with Molière's médecin, "*Nous avons changé tout cela.*" Fortunately "only a hundred and fifty copies of the work are printed," otherwise the public would expand their eyes to the danger of bursting them, or else be in danger of bursting their sides with laughter. Well might the royal Dane exclaim, "There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy!"

II. It has been recorded, as an instance of extraordinary power in James Wyatt, that it was his custom to make sketches in his travelling carriage of such alterations as would be likely to suit the place he was making a professional visit to. For my own part, I can see nothing whatever extraordinary in a man's

"jotting down" on paper, in a few minutes, ideas that would take him as many days to perfect and elaborate; and, provided a man has any ideas at all, they are just as likely to occur to him on the road, where he has nothing else to occupy his attention, as in any other place. Judging from his works, I should rather say that James Wyatt seldom cared to do more than work from the first ideas that suggested themselves; for most of his buildings are exceedingly trivial and commonplace in respect to design. He was, however, in great vogue, and probably deemed it prudent, therefore, to play the economist with his ideas, lest his stock should be quite exhausted before all his customers were served. Notwithstanding this, a critical examination of his works would be useful; and they would furnish abundant matter for criticism, although Mr. Allan Cunningham has not condescended even to mention Wyatt in his *Lives of British Architects*.

III. "To snatch a grace beyond the rules of art," has been considered, by some, as just within a hair's breadth of positive nonsense. "How is grace," they ask, "to be obtained by stepping out of the boundary of art? Either the effect so achieved must be compatible with art, consequently within its province; or it must be at variance with art, and preposterous." Now, with due deference to such acute commentators, I conceive that, in their eagerness to convict the poet of writing elegant nonsense, by raising a difficulty where there is none whatever, they show their ingenuity chiefly in misunderstanding what is perfectly obvious. Had the poet advised us to snatch a grace *contrary* to art, we might very well have been staggered at his counsel; but to achieve effects beyond the *rules* of art is altogether a different affair. Happily no art has yet been so methodised as to reduce it to nothing more than a system of mere rules, sufficient to meet every possible case that may occur; in other words, it has not been brought down quite to the level of machinery and manufactures. What may, in process of time, be accomplished, I pretend not to predict; although, as far as architecture is concerned, there does appear some danger of its being converted from a fine art into a mere mechanical pursuit. Let any one look at the numerous porticoes that have, of late years, been erected in our metropolis, and point out, if he can, a single one which exhibits the slightest originality of conception. I do not mean to say that we have none which deserve any commendation for their beauty, quite the contrary; yet their beauty is chiefly derived from their being executed after good models; and, so far, they may be allowed to show the correct taste of their respective architects, but certainly neither genius nor any exertion of fancy on their part. All that the latter have achieved might have been equally well accomplished by any one else. Very seldom indeed do we find even an attempt at that kind of originality

which results from a fresh conception of a subject hackneyed in itself: witness the new churches, which, whether Grecian or Gothic, are, one and all, treated according to the same system of routine; so that, with very few exceptions, they are hardly more than variations of the same idea, and consist of *stereotype* plans; to which ready-made features and second-hand details are more or less happily applied.

. IV. I know not whether Ludwig I. of Bavaria is to be included among those unfortunate persons whom Mr. Wilkins so pleasantly ridicules as "heaven-enlightened amateurs;" but he, most assuredly, is an amateur of the first magnitude, and a tolerably enlightened and intelligent one withal, as the numerous splendid works with which he has adorned Munich abundantly testify. Why, of all persons in the world, Mr. Wilkins should have shown himself so testy and splenetic on a recent occasion, it is difficult to say. Instead of coming forward, as he did, to censure, in a singularly unusual strain, the design of a rival architect, along with whom he himself had been a competitor for the same building, it would have been more prudent in him to remain quiet until it shall be seen how he acquits himself in the National Gallery. I think I could point out to Mr. Wilkins, not only many defects both in his design and plan, but how he might have avoided them by a few modifications of certain parts, which would not at all affect the main arrangement of either.

V. "Ah!" whines out some Smelfungus, "ah! we don't build cathedrals nowadays! ah! in the good old times architects had opportunities of achieving wonders; but now we have nothing but mushroom elevations of lath and plaster—mere trumpery kickshaws." Of a certainty, my worthy Smelfungus, we do not, as you observe, build cathedrals and abbeys, and that for a tolerably reasonable reason: because there is no occasion for doing so. But we do build theatres and club-houses, and markets, and arcades, and bazaars, and schools, and hospitals, and conservatories, and ball-rooms, and other edifices, intended for various purposes, both public and private; all of which afford ample scope for design, and, I might say, room for exhibiting as much talent, originality, taste, and *nous*, as any ecclesiastical or monastical buildings are likely ever to give us. At least, let us show some conscience, and not call out that we would perform prodigies, did but the opportunities present themselves, when we find that some of the very finest opportunities that ever presented themselves have of late been quite thrown away: *vide* the New Palace, the National Gallery, Post-Office, Fishmonger's Hall, St. Thomas's Hospital, &c.; to take no account of the new churches, which, however their architects may have been limited in other respects, certainly allowed great diversity of design: instead of which, they look, nearly one and all, as if "done up" from the same recipe. — "Ah! then you agree

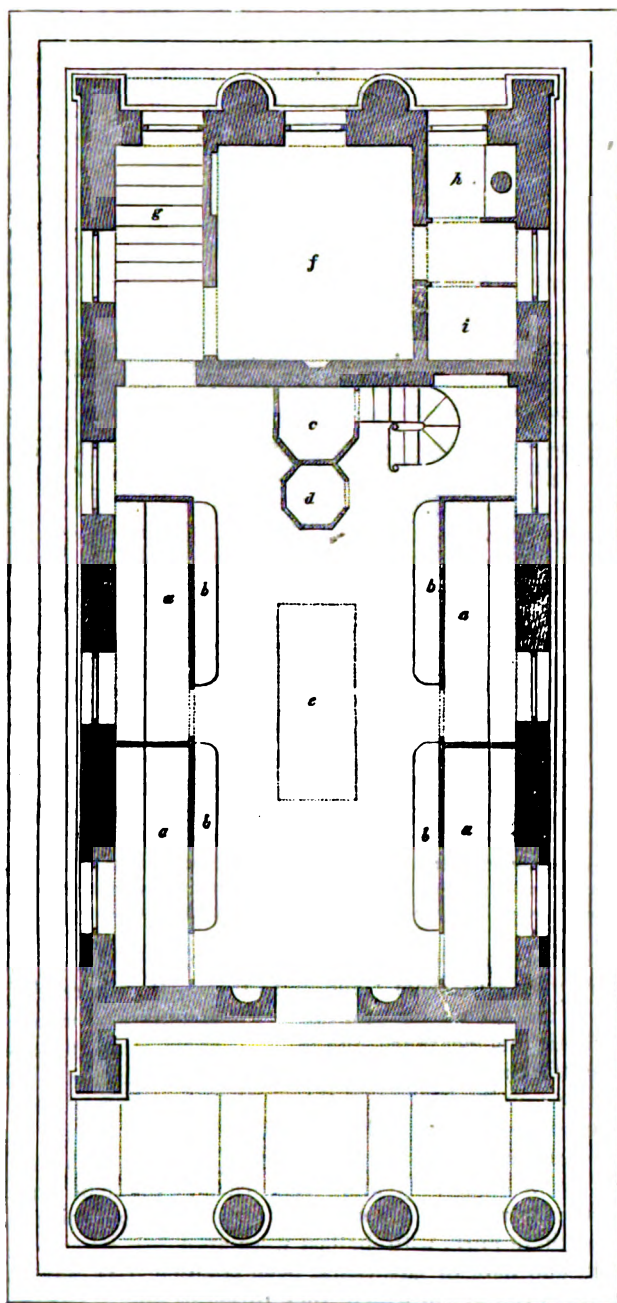
that we degenerate terribly?" — Softly, my amiable Smelfungus, softly: I make no such admission. Most certainly, I do allow that, if you cull out some of the best productions of former times, and some of the mediocre ones of our own, the comparison would not prove highly flattering to us. Neither can we expect to extricate ourselves all at once out of the quagmire into which we have fallen; yet that we have made some progress towards doing so, must be granted, if we take the average quality of what has been done in the present century, and compare it with that of the architecture of the preceding century and a half. If we have not quite come up to the mark of York Minster and King's College Chapel, Cambridge, we have, at any rate, greatly outstripped Strawberry Hill, and other *Gothicisings* of that kind. Even the New Post-Office may be contemplated without weeping for the old one; and, in my "humble opinion," the arch at the corner of Grosvenor Place fairly rivals Temple Bar in point of taste, notwithstanding that the latter is attributed to the great Sir Christopher. It must be confessed that the interior of no one of our modern Grecian churches can compete with that of the chapel of Greenwich Hospital; yet, cold and insipid as they, for the most part, are, the interior of such churches and chapels exhibit quite as good taste as the generality of those designed by Wren and his school: not excepting the far-famed St. Stephen's, Walbrook, itself; which, by the by, I suspect is not so greatly admired, in reality, as the flourishing encomiums passed upon it, in print, would lead us to imagine. At least, I have never yet met with one, among all my architectural friends, who has not confessed that, for his part, he could never perceive the extraordinary merit ascribed to it.

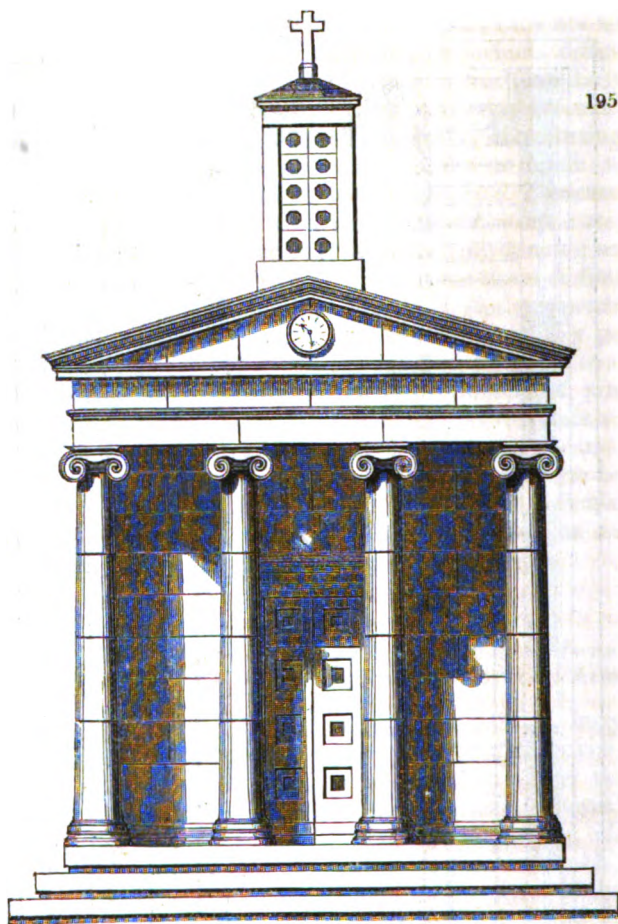
VI. Little is it to be wondered at, however much it may be to be regretted, that so many of our lately built Gothic chapels and churches are so unsatisfactory (presenting so markedly different a character from that exhibited in similar buildings belonging to the style imitated), when we find a mode of treating the subjects adopted which is quite the reverse of that pursued by the Gothic architects themselves whose works are chosen as objects of imitation. Let the building itself be ever so small, in its general disposition and outline it is almost invariably made to assume the air of a large church; the consequence of which unfortunate pretension is, that, instead of acquiring importance, it is reduced to insignificance; every thing about it being on so small a scale, that the whole looks no better than a model for, or, perhaps I should say, an abridgement of, a larger structure. Hence, those who are ignorant of the cause, and judge only by the effect, cry out that Gothic architecture can show itself to advantage only upon a large scale. Let them attentively examine some of the small chapels, chantries, and works of that

description formerly erected ; and they will, perhaps, discover that, although even upon a still smaller scale, they are stamped by an appropriate character of their own, which, different as it is from that of more extensive ecclesiastical buildings, is in perfect accordance with the style itself, and serves to exhibit its versatility of expression. Instead, however, of resorting, as it might naturally be supposed he would do, to such models, whenever a modern architect has to build a moderate-sized church, he generally, with most illaudable ambition, cuts up his whole design into a number of little parts ; introducing as many divisions into it as would be suited to a space three or four times greater than that he has to fill. His chief study appears to be, how to cram into it as many of the features generally met with in a large edifice belonging to the period he purposes to imitate, as he possibly can. Hence, he gives us a number of pinnacles, buttresses, windows, &c., not only so small as to produce an air of insignificance, but so impoverished in their details and execution, in order to reduce the expense that would else be occasioned by so many of them, as to create ideas of ridicule rather than magnificence ; whereas, by limiting himself as to quantity, he might greatly improve in regard to quality.

ART. V. *Design for a Cemetery Chapel, with Remarks on the old Method of Burying.* By MR. WM. PETIT GRIFFITH, Architect.

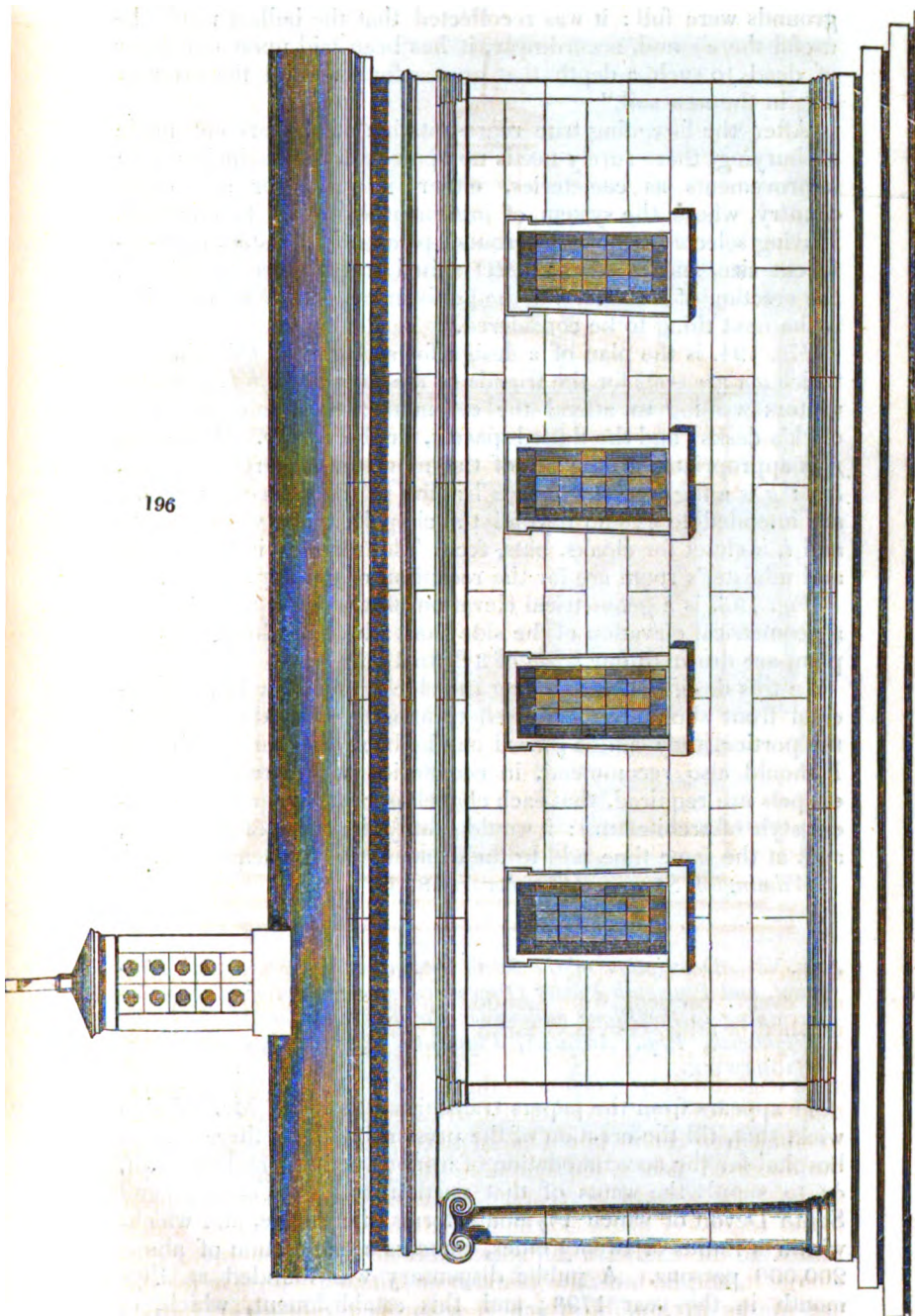
NOTWITHSTANDING the prejudice in favour of burying in churches and churchyards, the yearly increase of burials at the General Cemetery, Kensall Green, serves to prove that even that prejudice is on the decline ; but, until some effectual means are taken, such as an act of parliament compelling all interments to take place at the various cemeteries, the much desired change will not be completely effected. The extent of the evil of burying in over-populated cities is well shown in the following extract from the *Quarterly Review* : — “ In large towns, and more especially in the metropolis, it has become more difficult to find room for the dead than the living. The commissioners for the improvements in Westminster reported to parliament, in 1814, that St. Margaret’s churchyard could not, consistently with the health of the neighbourhood, be used much longer as a burying-ground ; for that it was with the greatest difficulty that a vacant place could be found for strangers : the family graves would not admit of more than one interment ; and many of them were too full for the reception of any member of the family to which they belonged. There are many churchyards in which the soil has been raised several feet above the level of the adjoining street by the continued accumulation of mortal matter ; and there are others in which the ground is actually probed with





a borer before a grave is opened ! Many tons of human bones are every year sent from London to the north, where they are crushed in mills, contrived for the purpose, and used as manure. Yet, with all this clearance, the number of the dead increases in such frightful disproportion to the space which we allot for them, that the question has been started, whether a sexton may not refuse to admit iron coffins into a burial place ; because, by this means, the deceased take a fee simple in the ground, which was only granted for a term of years. A curious expedient has been found to answer at Shields and Sunderland. The ships which return to these ports with ballast were at a loss where to discharge it, and had, of late years, been compelled to pay for the use of the ground on which they threw it out.' The burial-

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grounds were full : it was recollected that the ballast would be useful there ; and, accordingly, it has been laid upon one layer of dead to such a depth that graves for a second tier are now dug in the new soil."

After the foregoing true representation of the present mode of burying, there surely needs no apology for introducing such improvements as cemeteries, either into this or any other country, where the system of interment is similar to our own. Having selected a piece of ground, pleasantly situated, of a sufficient size, and in every respect suited to the objects required, the erection of a chapel for the performance of the funeral rites is the next thing to be considered.

Fig. 194. is the plan of a design for a chapel of this kind, in which *a a* are seats for the friends of the departed ; *b b*, seats for visitors wishing to attend the ceremony ; *c, d*, minister's and clerk's desks ; and the dotted space *e*, for the corpse. The room *f* is appropriated to the use of the minister, as a robing-room, &c. ; *g* is a flight of stone steps leading to the catacombs, which are intended to extend beyond the chapel ; *h* is a water-closet ; and *i*, a closet for cloaks, hats, &c. The recesses in the chapel and minister's room are for the reception of gas apparatuses.

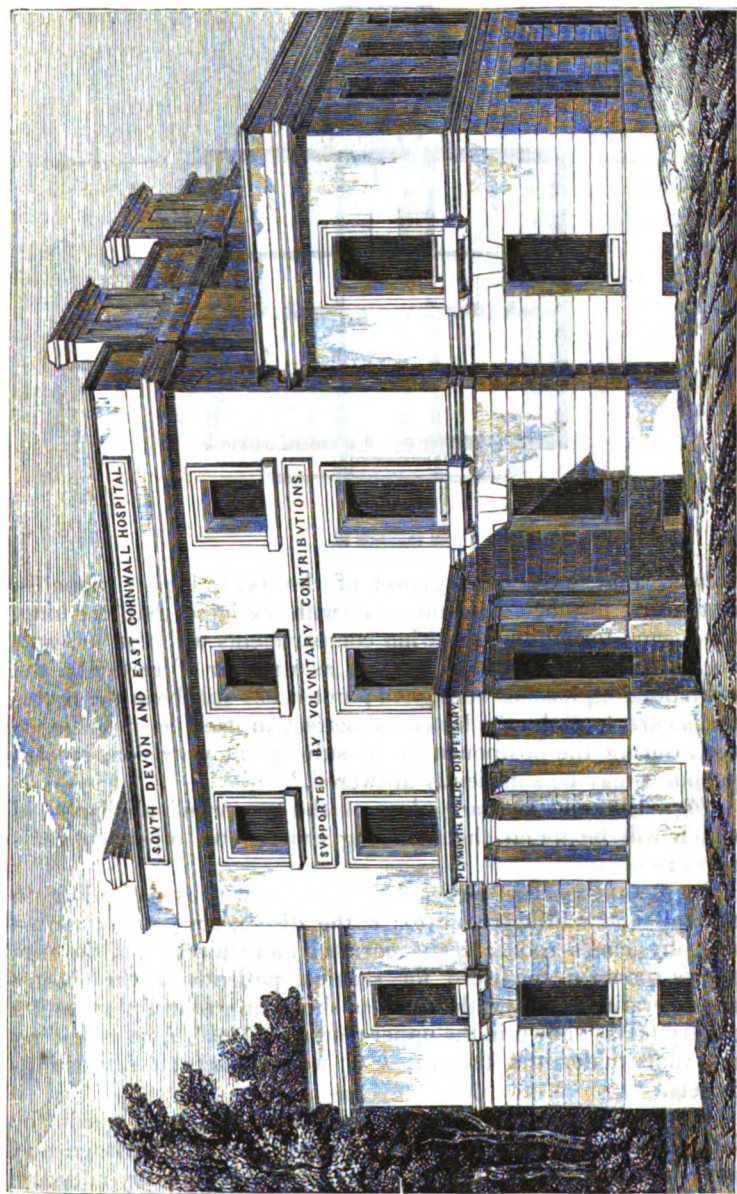
Fig. 195. is a geometrical elevation of the front, and *fig. 196.* a geometrical elevation of the side front ; both of which, with the plan, are drawn to one scale of 8 ft. to 1 in.

In this design, if introducing the clock and belfry in the principal front should be supposed to interfere with the beauty of the portico, they can be placed on the back front of the chapel. I should also recommend, in cemeteries where two or more chapels are required, that each chapel be constructed in a different style of architecture : it would gratify the tastes of all parties, and, at the same time, add to the ornament of the cemeteries.

Wilmington Square, December 1. 1835.

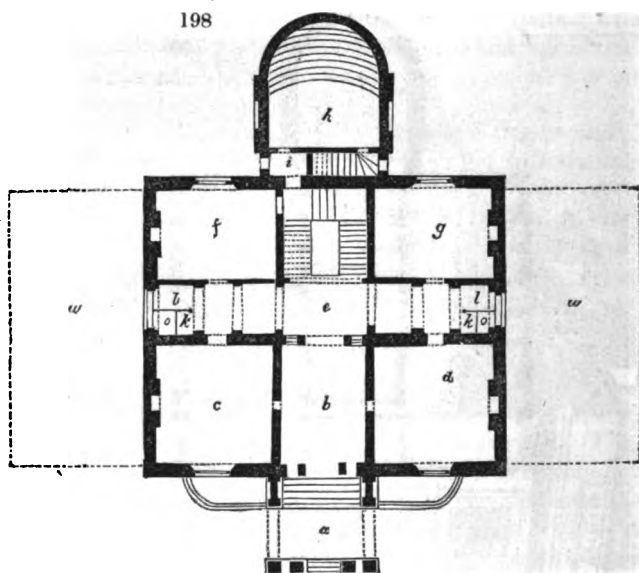
ART. VI. *Description of the South Devon and East Cornwall Hospital, and Plymouth Public Dispensary, now in Course of Erection according to the Plans and under the Superintendence of George Wightwick, Esq., Architect, Plymouth.* Communicated by Mr. WIGHTWICK.

It appears from the papers transmitted to us by Mr. Wightwick, that, till the erection of the present building, there was no hospital for the accommodation of in-door patients at Plymouth, or to supply the wants of that portion of East Cornwall and South Devon of which Plymouth forms the centre, and which, within a radius of twenty miles, contains a population of above 200,000 persons. A public dispensary was founded at Plymouth in the year 1798 ; and this establishment, which, of



course, was originally intended only for the relief of out-door patients, it is now intended to combine with the hospital.

Fig. 197. shows the elevation of the building; but we are in-



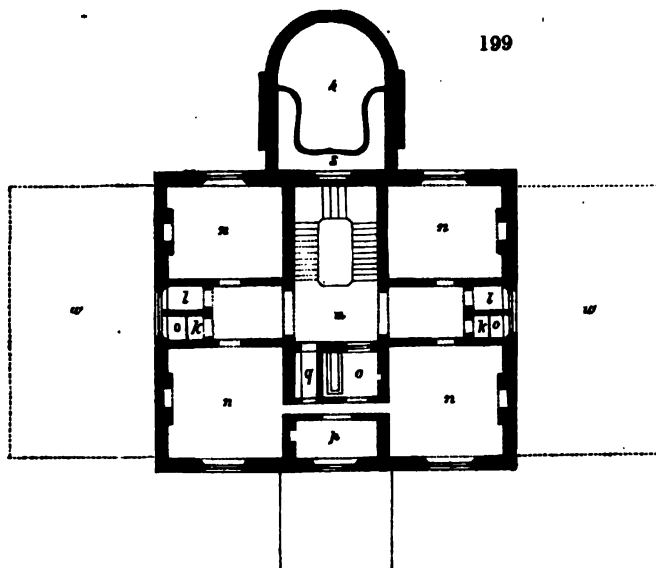
formed that "the construction of the central part alone is, in the first instance, contemplated, with the hope that, ere long, the means for adding the wing compartments will not be wanting. With this addition in view, as a matter of certainty, the main building has been designed; but it has still been the architect's care to make the latter as perfect in itself as possible, so that, during the postponement of subsequent provision, present purposes may be sufficiently answered."

Figs. 198. and 199. are plans of the two principal floors; in which will be found the following rooms and other conveniences:—

In *fig. 198.*, *a* is a portico for carriages, with steps leading to the hall and waiting-room (*b*); *c*, the dispensary; *d*, committee and physician's room; *e*, the corridor and staircase; *f*, the surgeon's room; *g*, the ward for surgical patients; *h*, the theatre and operating-room, with seats, as shown in ground plan, and a gallery (*s*), as shown in the upper plan (*fig. 199.*); *i*, stairs leading to a vault under the theatre; *k k*, water-closets; *l l*, washing-closets.

In *fig. 199.*, *m*, landing and corridor; *n n n n*, wards for forty patients; *o*, bath-room; *p*, nurse's room; *q*, passage and linen-press; *w, w*, outlines of wings to be subsequently added.

"There will be a spacious staircase, with flights of stone steps and landings, from bottom to top. Attached to the entrance in the north front will be a portico, having such altitude and projection as to admit of a full-sized carriage beneath it.



Care has been taken to insure every facility for the supply of water; and the closest attention has been given to the important subject of drainage. The architectural character of the design is indicated in the perspective view (*fig. 197.*), which exhibits, perhaps, as much decoration as the purpose of the building admits, and certainly as much as the funds of the institution allow.

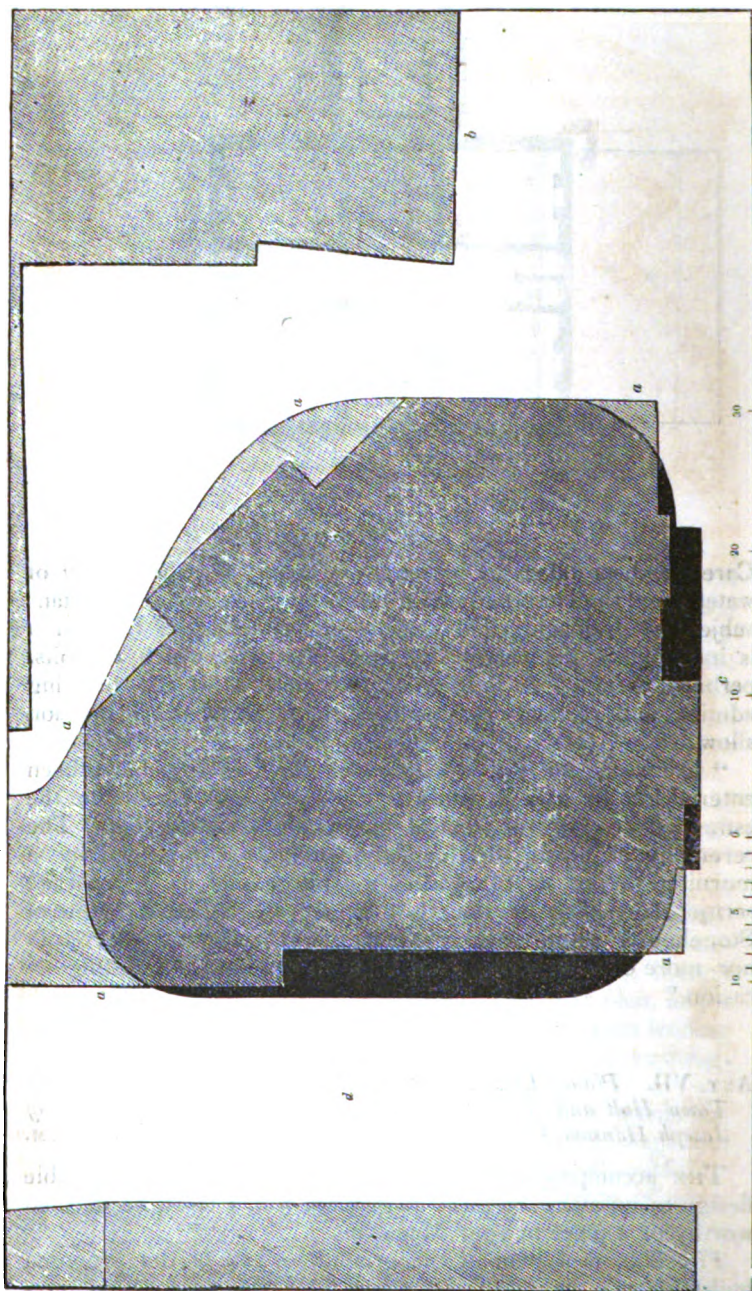
“Contracts for the execution of the building have been entered into by Messrs. Chown, Burgoyne, and Marshall; the estimated cost of the central part being about 2,200*l.* The ceremony of laying the foundation-stone was preceded by a morning service at St. Andrew’s Church, and an appropriate sermon, preached by the Rev. S. Rowe, perpetual curate of Stonehouse, whose pious eloquence was never more fervently nor more effectively displayed than on this most interesting occasion.”

ART. VII. *Plans, Elevation, and Perspective View of Lutterworth Town Hall and Market-house, to be built from the Designs of Joseph Hansom, Esq., Architect. Communicated by Mr. HANSOM.*

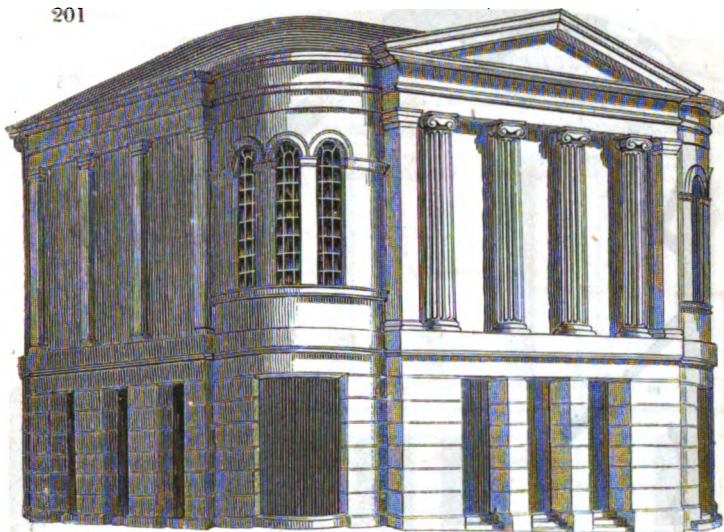
THE accompanying drawings, being illustrative of a suitable design to an awkward piece of ground, will, I trust, be deemed worthy of a place in your Magazine.

Fig. 200. is a plan of the ground, or site of the proposed building; *a a*, being the boundary line: the space is at pre-

200

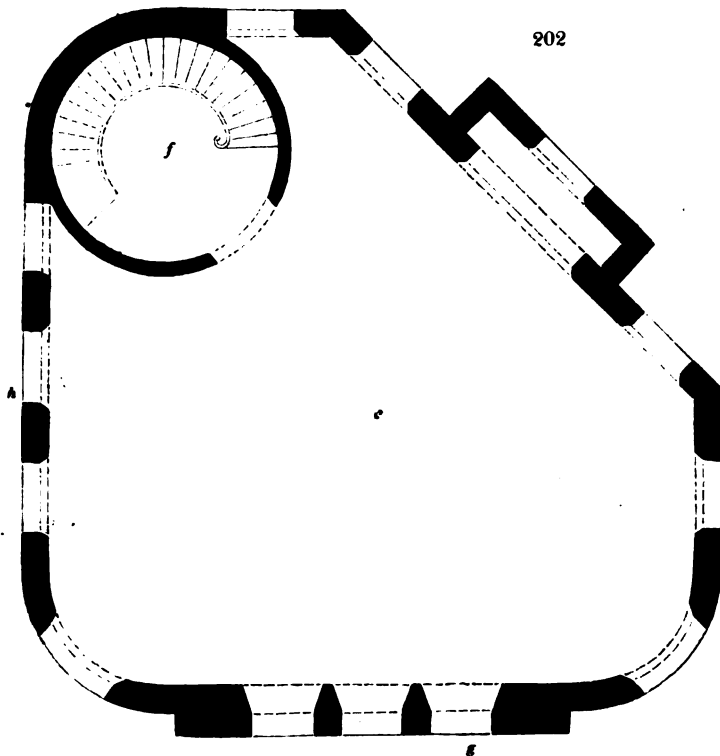


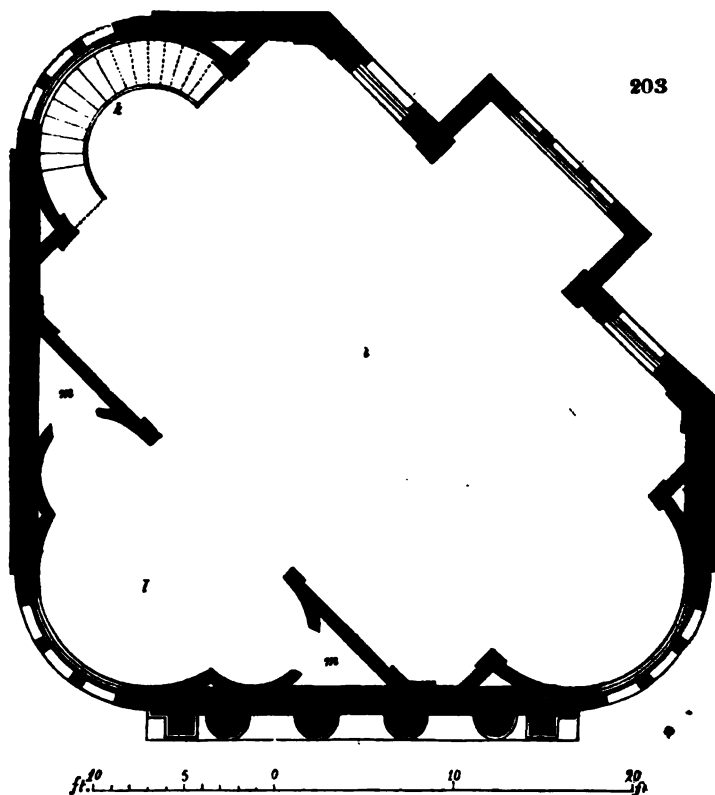
201



sent occupied by a group of very mean and unsightly little shops, &c.; although the situation, projecting, as it does, in a wide part

202





of the High Street, is a very prominent and important one. The darker tint denotes the space to be occupied by the intended new building. *b* is a mass of existing buildings, which are to remain; *c* is the High Street; and *d*, Ely Lane.

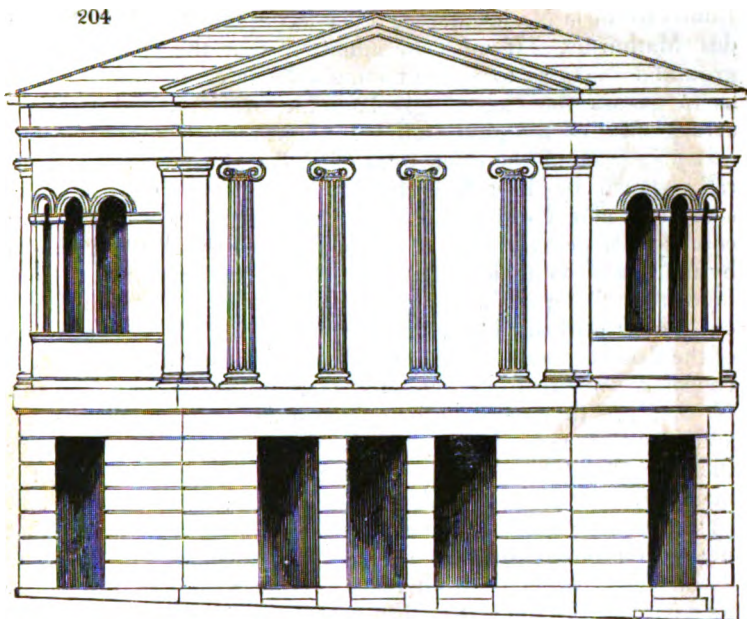
Fig. 202. is the ground plan: *e* is the market-house; *f*, the staircase and vestibule; *g*, High Street; and *h*, Ely Lane.

Fig. 203. is the principal floor: *i* is the public room; *k*, the staircase; *l*, the committee-room, &c.; and *m m*, two closets.

Fig. 204. is the elevation to the High Street.

Fig. 201. is a view of the fronts to the High Street and to Ely Lane.

The front of the building to the High Street is about 37 ft. long; and the building committee had, in their calculations, restricted themselves to the prospect of having such a room only as might be included in the length of this front line, although they wished for something much larger. It will be seen from the principal plan (*fig. 203.*) how far this wish has been carried into effect. The public room, including the semicircles at the ends, is 50 ft. long, and the width is 26 ft.; but the transverse



space available, by taking in the committee-room and the opposite recess, will approximate to the length of the room. The committee-room is intended to be partitioned from the public room by sliding or folding doors, and the stairs to be screened by a balustrade.

Hinckley, June 4. 1835.

ART. VIII. *An English Version of a French Plan.*
By W. H. LEEDS, Esq.

NEXT to the satisfaction of being left to shape out one's own ideas without restraint, is the pleasure of having to reshape and correct the defective performance of another; and the more refractorily and irremediably obstinate the case appears to be, the greater the delight in finding obstacles give way, difficulties surmounted, and imperfections removed. Besides which, as much may frequently be learned by noting the defects of a very faulty plan, as by studying a very good one. In this point of view, I therefore conceive that it would be a most excellent practice for students, were an ill-contrived plan or design given to them, which they should be required to remedy according to the best of their ability.

As an example of what I thus recommend to others, I have taken for my subject the plan of a first floor, or "flat," over a range of shops in a pile of buildings erected at Paris in 1829, by an architect named Poirier; having one front towards the

Boulevard de la Madeleine, the other facing the Rue de la Ferme des Mathurins. It must be admitted that the shape of the ground is such as to present some difficulties, yet hardly such as to excuse the exceedingly bad, inconvenient, and tasteless arrangement of the plan itself. It might almost be taken as an *exempli gratiâ* of the utter want of skill and contrivance generally shown by French architects, notwithstanding that they seem to claim a superiority in such matters, as well as their countrymen generally do in every thing else. And yet this is by no means an unfair sample of their architectural taste and ingenuity; for errors amounting to absurdities might be pointed out, not in ordinary houses, but such as, from the circumstance of the designs for them being published, are, it is to be presumed, considered worthy to be exhibited as useful lessons and patterns. Neither are they mere designs, but *bonâ fide* erections in brick and mortar: nevertheless, an Englishman would pronounce them uninhabitable. To convince the reader that I am not romancing, or at all exaggerating, I will detain him for a moment, by mentioning a few of the awkward bungling defects that met my eye on looking over a "*selection*" of specimens of domestic architecture, all taken from houses recently built in Paris and its environs. Of the taste shown in the elevations, and such parts of the interiors as are represented in sections, I will say nothing, since that of itself would furnish matter for a very long paper; and, therefore, I shall confine myself to what belongs to the plans alone. Here, one of the most striking peculiarities is, the extreme scantiness of space and accommodation in the kitchen, department. In one house, built by the architect Rousseau at Choisy le Roi, the kitchen opens immediately into the vestibule, almost close to the entrance; and is not only small in itself, but has nothing whatever attached to it, not even a closet of any kind. In fact, there does not appear to be any such places as pantry, larder, store-room, &c., in the whole house; neither is there any other means of access to, or egress from, the kitchen, than through the vestibule! Were this a mere solitary instance, we might consider it as a proof, on the part of the *selecter*, that, instead of acting unfairly, and bringing together all the completest designs he could obtain, as average specimens of the superior taste and ability of the modern French school of architecture, he had ventured to admit some that are apt to give a very unfavourable idea of it. Such, however, is by no means the case: errors and defects that among us would be reckoned downright blunders, if met with in the designs of the merest tyro, occur almost *passim*: neither do they present themselves singly, but more frequently in groups. In a house at Chezy, built by Durand (a name of some celebrity), and which house, be it observed, has an elevation in singularly bad taste, the entrance is a mere lobby, having the door of the dining-room immediately

facing that by which you are admitted into the house; so that you have a chance of obtaining a prospect at least of the dinner-table before you are beneath the roof. This dining-room opens immediately into a *bath*! which bath-room, again, has another door, by which it communicates directly with the kitchen; therefore a visitor may pop from the house door to the dinner-table in two or three strides; and as many more will bring him, if he so pleases, into *hot water*. As in the first-mentioned instance, too, the kitchen of this singularly contrived habitation opens into the lobby, or vestibule, and is quite destitute of any such accompaniment as pantry, store-closet, scullery, or similar appendage. In addition to inconsistencies of this kind, very little regard seems to be paid to the position of doors and windows, both which are not unfrequently so placed as to be neither at an angle, nor in the middle of that side of the room where they are placed; while instances as frequently occur of chimney-pieces either squeezed in between two doors, or placed so near a door as to preclude the possibility of a person seating himself on that side of the fireplace, except he chooses it for the sake of a draught of fresh air, and the *agrément* of being disturbed whenever the door is opened.

An English architect would probably have exerted his ingenuity some time before he pitched upon, as a suitable situation for a *cabinet de repos*, a little closet lighted only by a glazed door opening into an *amphibious* sort of apartment, performing the double duty of vestibule and billiard-room.

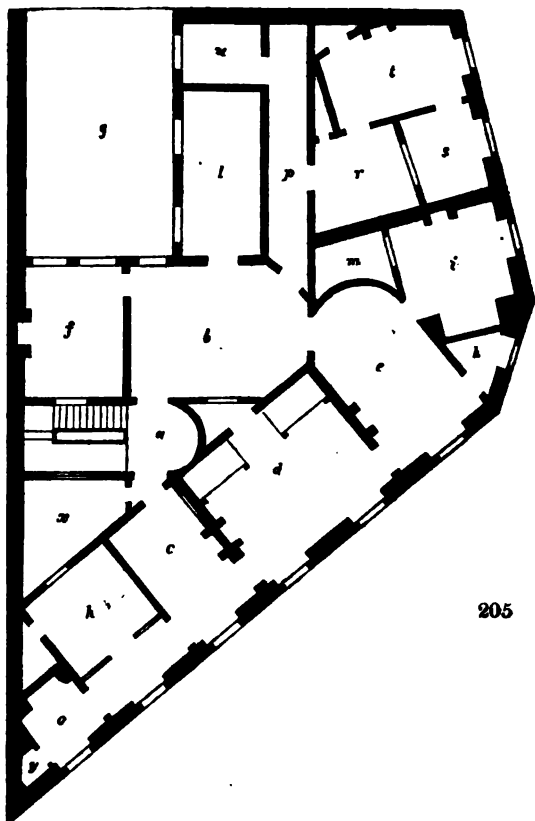
Where there is a great deal of pretension on the one side, it is but right that there should be some little strictness of observation on the other; therefore, as the French assume to themselves a more than ordinary degree of both ability and refined taste in the disposing and embellishing of their houses, they can hardly be offended, if, instead of taking their own report, we examine into what they have accomplished. It is not so very long ago, but that it may still be in the recollection of some readers, that Baron D'Haussez, who, it may be presumed, had seen some handsome mansions in this country, was pleased to deny us English any merit in domestic architecture; alleging, among other things; that, so far from keeping pace with other nations, we still retained all the barbarous "inconveniences which may have been overlooked by the unrefined habits of the *twelfth century*"!

This is indeed a formidable accusation, coming, as it does, from a Frenchman; since if, with all its study and refinement, that nation has not been able to get beyond such imperfections as dining-rooms and bed-rooms which are common thoroughfares, we must fall far short even of this advance in convenience; and as they, it seems, have attained such a pitch of luxury as to partition off the kitchen from the *salon à manger*, and place just

a door between them, we, who are so greatly behindhand, ought to have kitchen and dining-room both in one. Perhaps, too, in spite of its etymology, what is in France termed an *anglaise* is utterly unknown to ourselves, unless imported among us as a contrivance of Parisian refinement. M. le Baron must surely have entirely forgotten the wholesome caution, that those who live in houses of glass should not fling stones, else he would hardly have ventured to read us Englishmen a lecture upon architectural convenience, that being, of all qualities, almost the very last to be met with in a French house. It so happens, too (nor is it at all surprising it should), that this inattention to convenience tends to exclude a great deal of effect that might be obtained by more elaborate disposition of plan.

But it is time to proceed to the Boulevard de la Madeleine. — The ground floor is, as already observed, entirely occupied by shops, with the exception of the kitchen belonging to the dwelling, or flat, contained in the plan; and an entrance from the court-yard behind the building, leading to the lower part of the staircase *a*, in *fig.* 205. The landing of the stairs forms the only vestibule, without any corridor or other *pièce de communication*; so that you must enter at once either the dining-room (*b*), or the *petit salon* (*c*), through which, and the principal bed-chamber (*d*), you at length reach the *salon*, or drawingroom (*e*). Less contrivance could hardly have been manifested, so delightfully artless is the whole arrangement; since, overlooking other objections, the room *d* is so judiciously introduced between the two *salons*, as, by its greater spaciousness, to have the effect of making them appear comparatively insignificant. Numerous other defects and inconsistencies of a similar kind are observable throughout the whole plan; but, as they are easy to be detected, I shall now note more minutely, and *seriatim*, the errors and inadvertencies as they affect each separate room.

To begin, then, with the dining-room (*b*). The first thing to be alleged against it is, that it is necessarily a common thoroughfare to the rooms beyond; and, secondly, it opens immediately from the general staircase of the house. 3. It has only one window, placed quite in a corner; so that not only must the light be very imperfectly distributed, but all architectural symmetry is destroyed. Probably the door into the adjoining *lingerie*, or linen wardrobe, may be glazed; yet, unless it be with ground glass, a view from a dining-room into a room appropriated to such a use, and fitted up with presses, cannot be considered a piece of great refinement. 4. There are no fewer than five doors in the apartment, though it is one where it is desirable to have as few as possible; and these, moreover, are so placed as sadly to interfere with regularity; a regard to which would require another door, that is a sham one, to correspond with that on one of the canted sides of the room, leading into the passage (*p*);



unless (which would certainly be better) this last-mentioned entrance were stopped up altogether, and one made from the passage into the *lingerie*, which there could be little scruple thus to convert into a thoroughfare between the dining-room and passage, when equal liberty is taken with rooms that certainly ought to be exempted from it. 5. There is a window to give light to a closet belonging to the bed-chamber *d*; which is, at the best, a very gratuitous blemish, since that closet might have been equally as well or better lighted from the bed-room itself, by means of a glazed door: thus, in this instance, and that of the door into the passage, I have shown that there are two defects, which, so far from being unavoidable or requiring any material alteration in his plan, might have been so easily got rid of, that we can hardly imagine the architect gave himself the trouble of revising his design. Nay, not only would a serious defect have been remedied, but something like order, regularity, and effect would have been obtained by taking away the door leading into the passage, and putting a sham door facing that

opening into the *lingerie*; glazing it with squares of mirror, supposing the *lingerie* door to be a glazed one; or else putting mirror into both. 6. There is no chimney-piece; which, however, is no very serious objection, provided the room be properly warmed by other means. 7. This dining-room opens immediately at one end into the bed-room *f*, which, to adopt one of the untranslatable elegancies of the French tongue, is a perfect *cul de sac*, there being no outlet from that chamber save through the dining-room. 8. As if by way of making amends for there being only a single window in the dining-room, one side of this chamber is nearly all window (looking unto the leads (*g*) over the kitchen). 9. There is a window to admit light to the staircase, which renders the appropriation of this chamber to the purpose of a sleeping-room decidedly objectionable. Surely, therefore, it would be some improvement, had this been made a book-room, or library, instead of *h*; not only, too, for the reason just assigned, but because there would then have been three principal rooms immediately communicating with each other. Another point gained in that case would be, that the door might have been placed directly facing the fireplace, consequently in a line with that opening from the dining-room into the *salon*. This alteration, together with those already suggested, would impart to the dining-room a sufficient degree of symmetry, as there would be a door at each end, and two similar features (reckoning the window as one) on each side.

10. The *salon* will be found to contribute its share to this list; for, notwithstanding its imposing name, it is an exceedingly narrow room, being barely 13 ft. wide: so that our friend the baron need not have come over to England to look out for drawingrooms so small that one cannot "swing a cat" in them. 11. It is lighted only at one end; which, considering the narrowness of its proportions, is certainly no great recommendation in what is intended to be the principal sitting-room. 12. There is a door so close to the chimney-piece as to be both inconvenient and unsightly; and the more unsightly, as there is not a corresponding one on the other side of the fireplace to balance its effect. 13. The objection to this door is not at all lessened by the circumstance of its opening into a bedchamber, or by its happening to be between the fireplace and the window; that being precisely the side on which a person would prefer to sit, on account of the light. 14. As if it were not sufficient inconvenience to have the dining-room a thoroughfare to one sleeping-room, the *salon* stands in the same predicament with regard to the bed-room and dressing-room (*i*, *k*); with this difference, that they cannot by any possibility be entered, except through this drawingroom, although nothing would have been easier than to have opened a door from *p* into *m*, and cut off a passage into the bed-room through that closet (*m*).

I am aware it will be said that these are only an Englishman's notions of convenience and propriety: for the French make no scruple of throwing open a bed-chamber to company, provided only it be so handsomely fitted up as to cast no discredit on their taste in that respect. Nevertheless, putting delicacy and propriety entirely out of the question, this custom must be allowed to be anything but a piece of refinement, unless it be refinement to have a bed, however elegant it may be, in a drawingroom: and the distinction between a room for visitors so furnished, and a bed-room into which visitors are admitted, is hardly definable. To say that French people are not all fastidious on such points, or regard what we consider serious inconveniences, may very well be taken for granted; because, if they did, they would abandon such practices, and avoid such inconveniences: yet this is merely deciding the point of high civilisation and refinement against them; for neither did our barbarous ancestors of the twelfth century (whom the baron insists upon it that we still imitate) feel the least scruple as to, or any inconvenience from, many things that would now be deemed intolerable. Either, therefore, they were nevertheless as refined as ourselves, or else it must be admitted that the French lag woefully behind us in many respects, being utterly insensible to much that we account among the decencies and proprieties of life. We all know Sterne's anecdote of Madame R., and her exclamation, "Ce n'est rien que —." To be sure the lady saw nothing indecorous, or more than was perfectly natural under such circumstances: and, measured by themselves, the French, or indeed any other nation, may be pronounced unexceptionable; yet, as it is more usual to measure or estimate a thing by comparing it with some other, I cannot but think that a much lower degree of refinement in regard to domestic architecture, as it is influenced by habits of living, will be found to exist on the part of the French than on that of the English. —There is no escape from this *salon*, except through the bed-chamber.

15. To the small drawingroom *c*, nearly the same remarks will apply as to the other, than which it is still narrower; and this want of space is attended with all the greater inconvenience, owing to the two rooms being detached from each other by the interposition of a bed-chamber; whereas, if they communicated by means of wide folding doors, they would have been available as a single large apartment. That this might have been accomplished without the slightest difficulty, or without disturbing the rest of the plan, is apparent upon casting our eyes on it; for we perceive that it might at once be effected by merely transposing *c* and *d*, so as to bring the two drawing-rooms together; which being done, the chimney-piece in *e* must be placed opposite to where it now is, and the folding doors

be put in that situation, and, of course, the chimney-piece in the smaller drawingroom be made to face that in the other. All then that would remain further to be done would be, to stop up the doors from the *salon* into *i* and *k*, forming the passage into *i* as already suggested, and, of course, placing the bed in that room in a different position, so as to admit of a door being opened into *k*; unless the partition be removed which divides the bed alcove from the dressing-closet, so that a person might step out of bed at once on that side. It is hardly necessary to say that I would have no door between the smaller drawingroom and the adjoining bed-chamber, so that the fireplace side of each room would be free from doors and there would be only folding doors on the opposite one. Thus the two drawingrooms would be kept quite detached from the bed-chambers; yet, so far from seeming more contracted in consequence of there being fewer rooms immediately opening into each other, the house would appear more spacious by all the sitting-rooms being grouped together; since (the reader will bear in mind what has previously been recommended) there would then be a library, dining-room, and two drawingrooms, constituting one unbroken suite, and not the less pleasing from its not forming a direct line. To say the truth, a mere string of rooms, and those, too, of all kinds, extending with all the doors placed in a straight line (as is the case here from *k* to *g*), is far from contributing to architectural effect; or that which requires any management so as to produce an agreeable perspective. On the contrary, there would be a more startling than agreeable anticlimax, since the vista from the *salon* might occasionally chance to terminate in the water-closet! an arrangement utterly indefensible, unless the architect had ingeniously contrived it as a kind of *memento mori*, and satire on vainglorious parade.

There is another circumstance (16.) which deserves to be noticed, in regard to the drawingrooms; which is, that in the smaller one the architect has placed a sham door on one side of the fireplace, to correspond with the real door on the other; a degree of attention to symmetry all the more remarkable, because he has overlooked it in the larger room, where it was certainly called for; a sham door being there required, not only to correspond with the one opening into *d*, but also to face the one leading into *i*.

17. The library (*h*) is still smaller than the *petit salon* (*c*), a passage being cut off from it leading to the bath (*o*); so that it has only a borrowed light, admitted through the glazed partition: screen it can hardly be called, because it must be of so little service in that respect, that it might as well have been omitted altogether, except, perhaps, that it allows the library to be kept locked up, without cutting off access to the bath and the water-closet (*y*). 18. This room has no fireplace; and (19.) there is a

window from it into *x*, which is a place for keeping fire-wood ; so that, at any rate, this library may be said to command a view of a *sylvan* well-wooded scene.

20. To get to the bed-chamber *t*, it is necessary to pass through a second *lingerie*, marked *r* in the plan, and lighted by a window towards the dressing-room *s*. The letter *u* marks the situation of a small staircase leading to some chambers above, but not descending lower than this floor.

I have thus far distinctly specified and enumerated *twenty* defects, at least what I conceive to be such ; which is more to the purpose, and a stronger allegation against the plan, than if I had said, in mere random language, that it had a hundred faults. How some of them might have been obviated, without at all disturbing the present arrangement, I have shown as I have gone on, and it now remains for me to show how I would have disposed the whole. Yet the length to which my remarks have extended compels me to follow the example of the fair Scheherazade, and defer gratifying the reader's curiosity until next month — and next year.

MISCELLANEOUS INTELLIGENCE.

ART. I. Domestic Notices.

ENGLAND.

ARCHITECTURAL Society, Lincoln's Inn Fields. — The meetings of this Society commenced for the winter season on November 8. ; when an address was read by the president, in which, after adverting to the deficiencies of architectural education in this country, inasmuch as the usual course of study in the office of a professional man is confined almost exclusively to matters of business, and furnishes hardly any instruction in regard to design and to taste, he pointed out the service afforded to junior architects by such an institution. He further gave it as his opinion, that, so far from its being a circumstance at all to be regretted, it was one rather for congratulation, that they had not coalesced with, and been merged in, the Institute of British Architects. The rooms were exceedingly well filled, and there was no lack of attractive publications, engravings, and drawings, for the amusement of the company. Among these, we noticed an exceedingly interesting set of drawings and details of the Manor House at Great Chatfield, in Wiltshire, by Mr. T. L. Walker, which are intended to form the second part of the *New Series of Pugin's Gothic Examples*, edited by him. He has been exceedingly fortunate in meeting with so fine and perfect a specimen of our early domestic architecture (about the period of Henry VI.), and one, withal, that is comparatively little known, certainly never before illustrated as it merits to be. There is a most noble hall, with several singularly rich oriel ; and the whole structure has escaped deterioration. Two highly finished sections, by Mr. Richardson, of the Gilt Room at Holland House, exhibited a gorgeous specimen of interior embellishment in the Elizabethan style. A design by Lyandre Kaffangiogo, architect, of Macedonia, for a national monument, recording the restoration of Greece, and proposed to be erected on the Isthmus of Corinth, excited much attention, and no little admiration ; both for the richness of the architecture, especially in the interior, and for the finished execution of the drawings. We observed, likewise, a splendid design for a royal palace, upon

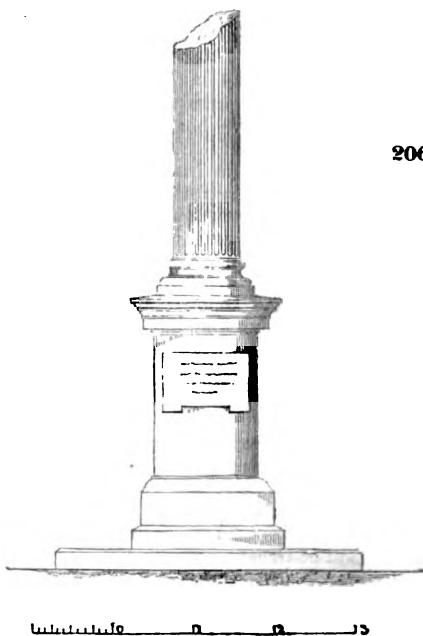
a scale of magnificence, and in a richness of style, that, had we even for an instant doubted it before, would have assured us that it was not out of sheer inability to obtain any thing better, that we are now doomed to behold the miserable abortion in St. James's Park. — *Y. Y.*

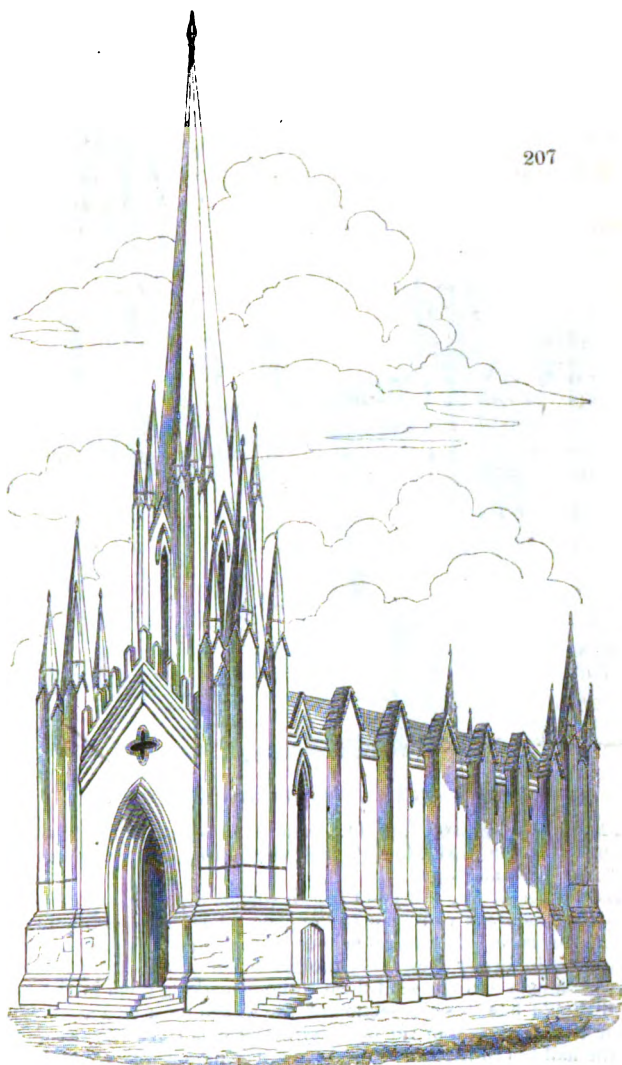
Lancashire. Liverpool. — The Custom-House, which has been in progress about eight years, is drawing towards its completion. It is a building of considerable extent, embracing the Custom-House, Excise Office, Post-Office, &c., under one roof. The Ionic is the order employed, of which there are octostyle porticoes, of magnificent dimensions, on the east, west, and north sides. The grand entrance to the Liverpool and Manchester railway, at the mouth of the new tunnel in Lime Street, is also in progress. It consists of a noble façade, in the Italian, or Roman, style, with engaged Corinthian columns elevated on pedestals, and semicircular arched gateways, from the designs of Mr. John Foster. The Mechanics' Institution, the largest and finest building of the kind in the kingdom, is expected to be opened in January next. New rooms for the Royal Institution have lately been erected in Seel Street, from the designs of Mr. Picton. They consist of a central Doric portico of four columns, surmounted by a pediment, with rusticated wings, in the style of the Propylæa at Athens. A new cemetery, in the suburbs, at Kirkdale, is in progress, also from the designs of Mr. Picton. The entrance and chapel will be highly enriched specimens of the Tudor Gothic style. A new Medical Hall has lately been erected from the designs of Mr. C. Rampling: it is a chaste and neat example of the Ionic order. Huskisson's statue, by Gibson, has at length arrived from Rome, and is fixed in its present prison-house, a room of 15 ft. diameter for a statue 9 ft. high! It is, at present, open to the public; but in the course of a week or two it is to be closed in; when the only opportunity of inspecting this noble work of art will be by peeping through a glass door. Whether this door will have to be unlocked by a silver key, when required, this deponent sayeth not. — *W. Liverpool, November 3. 1836.*

IRELAND.

Dublin, May, 1836. — *Fig. 207.* is the elevation of the chapel of ease to St. Mary's parish in this city, mentioned by your correspondent R. V. (Vol. II. p. 428.) It is built of blue stone in coursed rubble-work, and contains sittings for 600 persons on the ground floor. Although the exterior is greatly admired, the interior is any thing but pleasing, from the want of unity displayed in the roof; which is a plain arch of 43 ft. span, springing from a large moulding, similar to a water-table, about 10 ft. from the floor; the whole being plastered in imitation of granite.

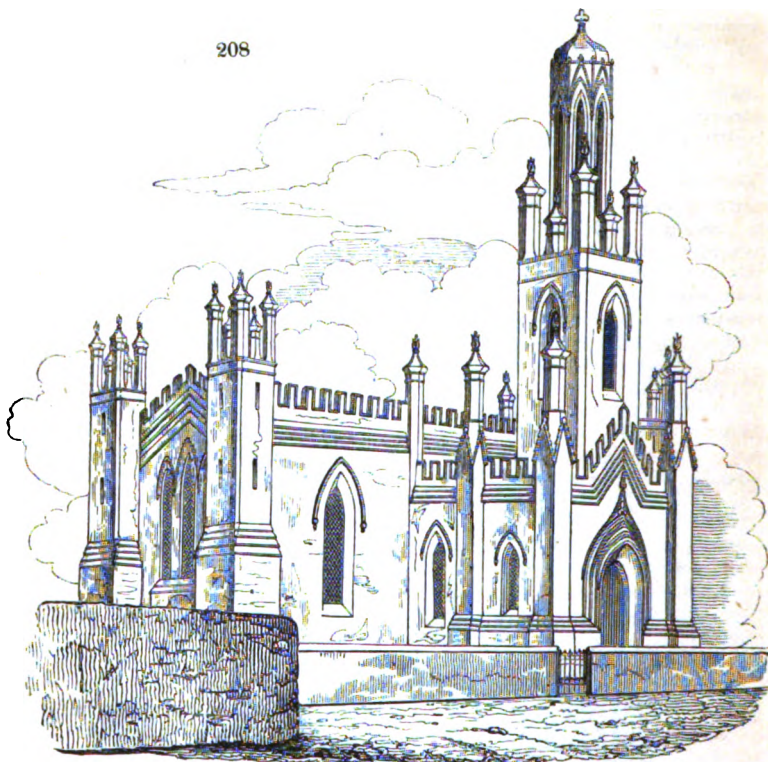
Fig. 208. is the elevation of Monkstown Church, close to Kingstown, also mentioned by R. V., which is built of granite in uncoursed rubble. The exterior of this church is remarkably rough, but the interior is groined and plastered in imitation of granite. Both these





edifices are from the designs of — Temple, Esq., architect to the First Fruits for the province of Leinster, and both have been erected about five years.

Fig. 206. is the elevation of a monument lately erected in Santry church-yard, within four miles of Dublin, to the memory of a Miss Cox, aged 14. The design is a broken pillar, similar to one in bas-relief in Bristol Cathedral; which was there extremely appropriate, being erected to the memory of a youth, the last heir of an ancient family. I am not aware how it applies in the present case; and it does not appear to be understood generally, for, while I was looking at it, I heard several exclaim, “Ah! who went and broke it?” — *S. S.*



ART. II. *Retrospective Criticism.*

ERRATA. — Page 520. line 11. from the bottom, for “poems,” read “proems;” and in p. 514. line 17. from the bottom, for “we pretend to give,” read “they pretend to give.”

Lamb's Villa, &c. (p. 456.) — I beg to submit the necessity of your causing scales or dimensions to be put to the plans which you publish in the *Architectural Magazine*. There are neither to the sketches published in October, nor to some in former Numbers; though, in all probability, the contributors of those designs did not send them without marking them in the usual manner. I should like to see a section of the design for a villa at p. 456.; for I do not think a person of the ordinary height could get into the door leading from the hall (*b*) to the kitchen (*g*); there being but nine risers shown in the flight of stairs by which the ascent over this door is gained. — *John Tate. Dublin, October 14.*

The new Church at Stratford le Bow (p. 482.) is not by Barry, as stated above, but by Blore; and the new theatre at Leicester (p. 482.) was built by Beazley, and decorated by Crace. Barry is about to erect a new building, to be called the *Athenæum*, at Manchester. It will be in the Italian style; and contain a coffee-room, news-room, library, lecture-room, &c. — *W. H. L.*

END OF THE THIRD VOLUME.

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